MINING WORLD

in this issue

Nevada Iron Mining

Page 26

JULY, 1952

Vol. 14 No. 8

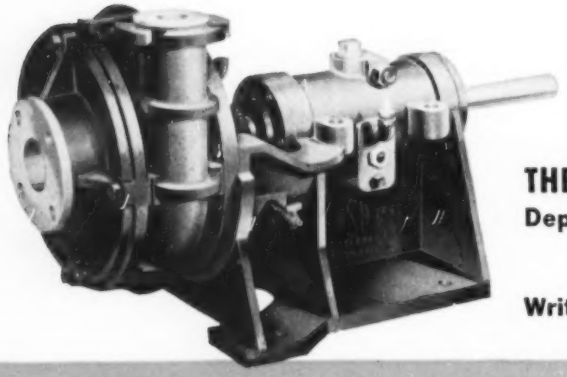
35 cents a copy
In Sterling, 3s

HYDROSEALS are saving money South of the Border

Air photo of a large zinc concentration plant in Mexico. Tailings dam shown in right foreground.

Hydroseal Pumps are right at home in the tough jobs that must be done cheaply and efficiently. That's why they are welcome at this large zinc concentration plant in the land of tequila and tamales.

In this operation, two C-11 Hydroseal Slurry Pumps (one acting as standby) handle the tailings at an average rate of from 760 to 1025 G.P.M., the percentage of solids by weight being from 20 to 25%. Both pumps are equipped with individual automatic speed controls to compensate for changes in volume and/or head. The T.D.H. varies from 32 to 125 ft. Discharge to the tailings dam is through 3700 ft. of 8-in. pipe.



Pumping systems like this that almost think for themselves don't just happen . . . they're the product of our ace-high engineers who are constantly designing more efficient ways of handling abrasive materials with the world-famous Hydroseal Pump. Let them help you with your pumping problems —the tougher they are, the better they like them!

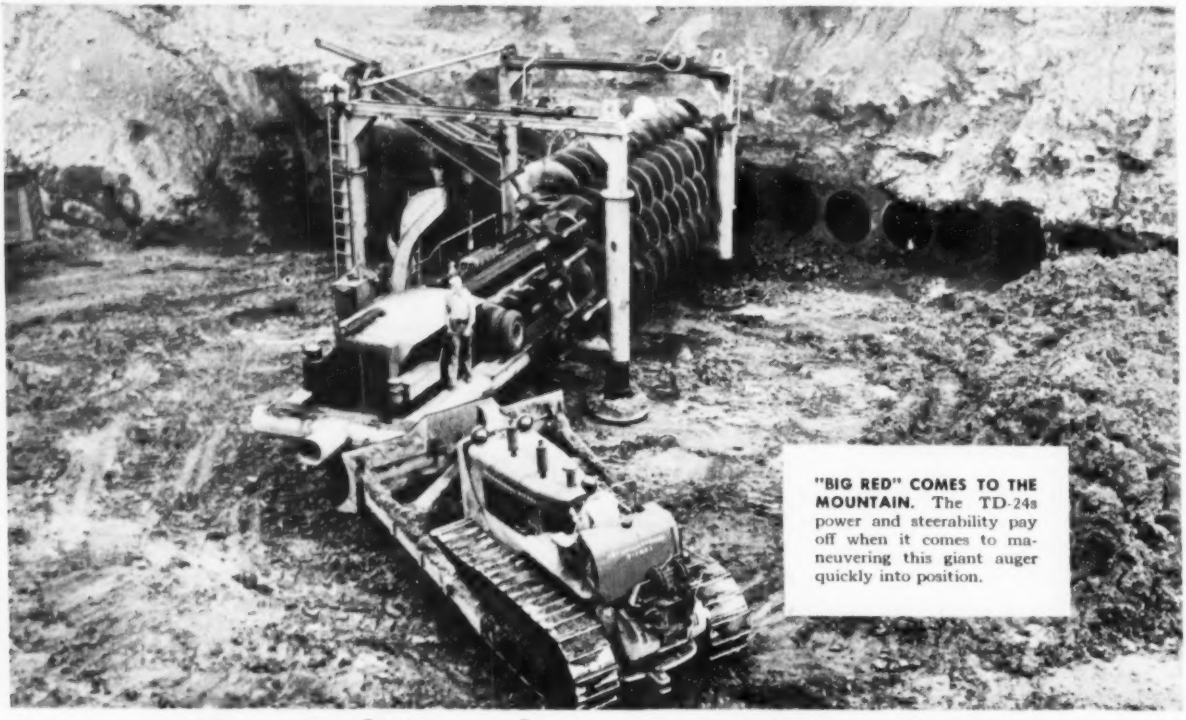
THE ALLEN-SHERMAN-HOFF PUMP CO.
Dept. J, 259 E. Lancaster Ave., Wynnewood, Pa.
Representatives in Most Principal Cities

Write for our new Catalog No. 451

HYDROSEAL SAND, SLURRY & DREDGE PUMPS
MAXIMIX RUBBER PROTECTED

HYDROSEAL PACKLESS AND MAXIMIX DESIGNS ARE COVERED BY PATENTS AND APPLICATIONS IN THE MAJOR MINING CENTERS OF THE WORLD

TURNS with POWER ON BOTH TRACKS



"BIG RED" COMES TO THE MOUNTAIN. The TD-24s power and steerability pay off when it comes to maneuvering this giant auger quickly into position.

"Big Red's" exclusive steering system pays off big at West Virginia mine

To save manpower and get the coal out faster, Compass Coal Co. of Phillippi, West Virginia, uses a huge drill rig to produce 300 tons a shift.

An International TD-24 crawler moves the rig around, and also builds roadways. For both these jobs, the TD-24 is the Champ for sure. Because it has 148 *drawbar* horsepower—more than any other crawler on the market—and because *it can turn with power on both tracks.*

Some tractors can pivot-turn and feather-turn with all power on the outside track. Others can make gradual turns with power on both tracks. But only International Planet Power Steering gives you all three turns in one tractor—the Big Red TD-24.

Get the details from your International Industrial Distributor. Ask him too about his major shop facilities and fast field service. Get the whole low-down—and you'll be a TD-24 man yourself from then on in!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS

MINING WORLD, July, 1952. Volume 14 No. 8. Published monthly, except April when publication is semi-monthly, at Emmett St., Bristol, Conn. Executive, advertising and editorial offices, 121 Second St., San Francisco 5, California. Subscription in United States, North, Central and South America, $3.00 per year; other countries, $4.00 per year. Entered as second class matter Oct. 10, 1951 at the Post Office at Bristol, Conn., under the act of March 3, 1879. Postmaster: please send notice 3579 to MINING WORLD, 71 Columbia St., Seattle 4, Washington.

the DORR 4-Arm Torq Thickener

Makes lighter Work of HEAVY Ore Tailings

To handle heavy granular solids subject to widely fluctuating feeds — note the 4-arm feature of the Dorr Torq Thickener.

Two long arms rake the outer section of the tank floor. The two short arms handle the load in the inner section, raking all the solids to a conventional center-cone discharge. All four arms are provided with the exclusive Torq feature . . . which reduces overload by continuous raking action . . . eliminates the danger of stalling and damaging the unit.

For more information about the mechanical advantages of the 4-Arm Torq and the complete Dorr Thickener line, ask us to send you a copy of Bulletin No. 3001. THE DORR COMPANY, Barry Place, Stamford, Conn.

Torq is a registered trademark of The Dorr Company.

Better tools TODAY to meet tomorrow's demand

DORRCO

DORR

WORLD - WIDE RESEARCH • ENGINEERING • EQUIPMENT

THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.

Offices, Associated Companies or Representatives in principal cities of the world.

Slushing "round-the-corner" with a single setup! Floyd Klein operates double-drum hoist as Pacific RTC Block guides Pacific Slushmaster Scraper on 90° turn.

Photo Courtesy of Bunker Hill And Sullivan Mining And Concentrating Co., Kellogg, Idaho.

Here's the *Right* turn

PACIFIC
Sheave Block
Model C Half Shroud

PACIFIC
"ROUND-THE-CORNER"
Sheave Block

PACIFIC
"SLUSHMASTER"
SCRAPER
Model 2A 34"

Here you see a two-drum hoist pulling a fully loaded Pacific "Slushmaster" scraper around a 90° right turn with the help of a Pacific "Round-The-Corner" Sheave Block and a Pacific Half Shroud Sheave Block. With this Pacific Team, you can pull your scraper around any number of turns.

It's the "Right Turn" profit-wise, too. Operating experience shows that you can cut the cost of mucking out a square-set round in half! Be on the winning side. Pacific Teamwork is paying off for others and will do the same for you. Write today for complete information.

ALLOY STEEL AND METALS CO.

1848 EAST 55TH STREET
LOS ANGELES 58, CALIF.

Mailing Address: Box 15323 Vernon Station, Los Angeles 58, Calif.

BE SPECIFIC—ORDER PACIFIC
Jaw Crushers, Sheave Anchors, Bit Knockers and Pacific Wearing Parts

Dependable...

PROFITABLE PERFORMANCE

YEAR IN AND YEAR OUT!

Euclids are designed and built for long life and heavy duty service in off-the-highway hauling. Where the going is tough—in open pit mines and quarries . . . and off-the-road construction and industrial work—"Eucs" have earned their reputation for rugged staying power, continuous operation and low cost production.

There are models for your every hauling requirement . . . body designs for every type of material . . . and the speed and capacity to haul bigger loads faster and at lower cost per ton or yard moved.

Euclid owners know that they can depend on prompt, efficient service from a world-wide distributor organization. The services of a hauling equipment specialist and genuine Euclid replacement parts are available to keep operating and maintenance costs at a minimum.

Let your Euclid Distributor provide you with information on the Euclid line of earth moving equipment . . . call or write today.

Rear-Dump "Eucs" have capacities ranging from 10 to 34 tons with diesel engines of 125 to 380 h.p. This 15-ton model, with top extensions, is being loaded on a highway construction job in Massachusetts.

Euclid Scraper picks up a heaped load on an airport job in North Carolina. Capacity is 15.5 cu. yds. struck . . . 275 h.p. diesel engine.

Bottom-Dump Euclids range in capacity from 13 to 25 cu. yds., have diesel engines of 190 to 300 h.p. This "Euc" is hauling approximately 20 cu. yds. at a big earth fill dam in Colorado.

MORE LOADS PER HOUR—
MORE PROFIT PER LOAD

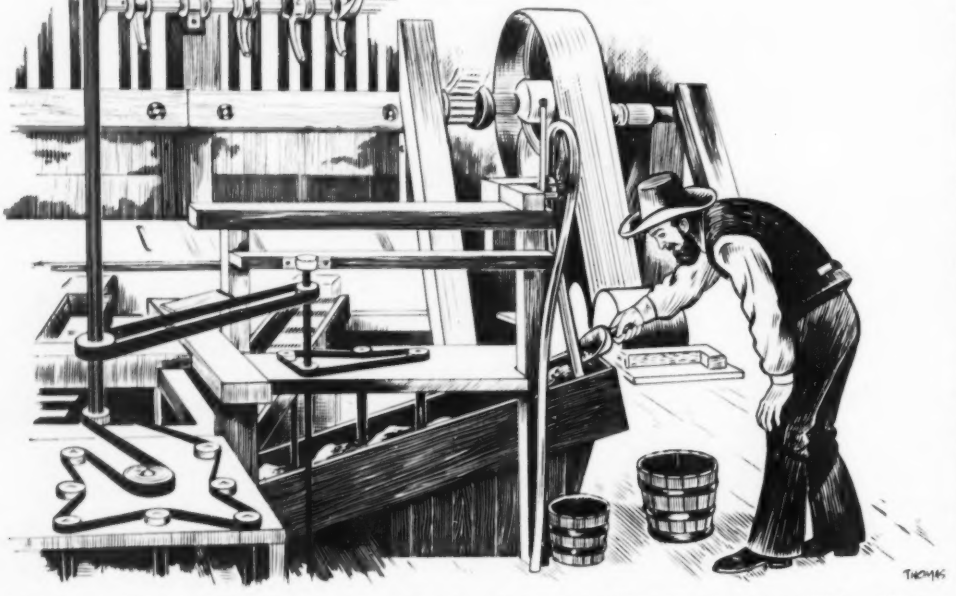
The EUCLID ROAD MACHINERY Co.

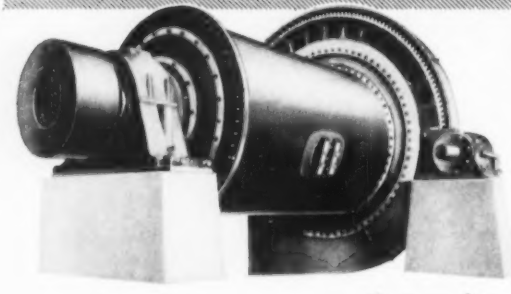
CLEVELAND 17, OHIO

EUCLIDS *Move the World*

An engineer's dream . . .

this mill incorporated all the "best" equipment for processing quartz. It was built shortly after the Gold Rush in California.





As great mining developments opened up in our country, the mining industry repeatedly devised more efficient methods to increase production. These improvements in technique came hand-in-hand with the invention of better equipment. For 50 years, Traylor has led in designing advanced crushing machinery to meet the growing demands of the industry. Mining men know that experience is their most dependable guide for matching machines with methods for best results. Traylor has experience . . . half a century of it.

Traylor builds Ball, Rod, Tube and Compartment Mills. Each type is produced in a wide variety of sizes to meet your exact needs.

OUR GOLDEN ANNIVERSARY YEAR 1902 1952

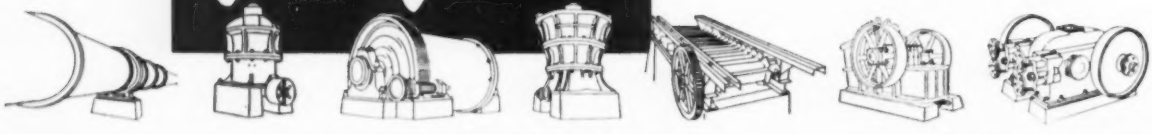
TRAYLOR ENGINEERING & MANUFACTURING CO.

1413 MILL ST., ALLENTOWN, PA.

SALES OFFICES: New York, Chicago, Los Angeles, San Francisco

Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P. Q.

a **Traylor** *leads to greater profits*



STANDARD ENGINEER'S REPORT

DATA

LUBRICANT Calol Multi-Service Oils

UNITS Compressors 14×12 14×12 14×14
9×12 7½×12 10×14

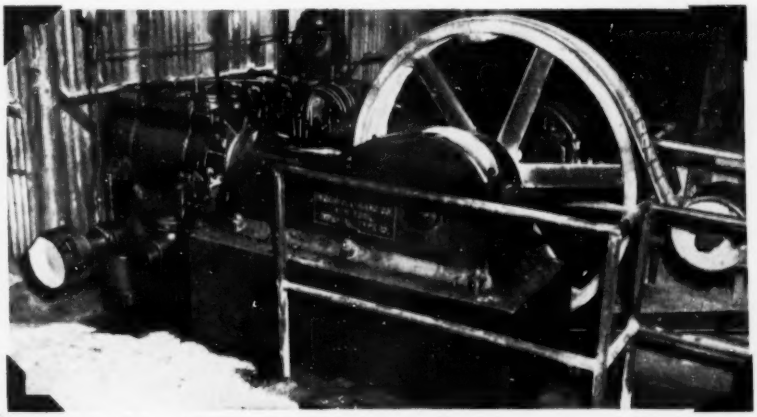
LUBRICATOR Force feed and crankcase

CONDITIONS Extreme dust conditions

PERIOD 7 years

FIRM U. S. Lime Products Corp., Sonora, Calif.

Lime mine compressor rings still good after 7 years!



LUBRICATED WITH CALOL MULTI-SERVICE OIL 55X, this is one of three Ingersoll-Rand compressors that supply all air for the Sonora, Calif., mine of the U.S. Lime Products Corp. Heavy coating of lime dust on the air intake and floor indicates the extreme conditions under which the compressor works. Even so, when pistons were pulled for the first time after seven years, rings were found to have no deposits, ports and grooves were free and clean—and the entire assembly was returned to operation.

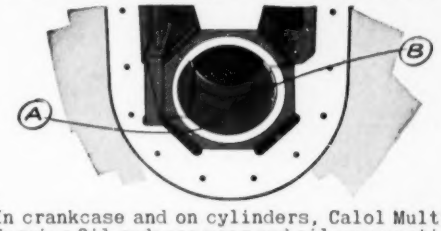
THESE VALVES, taken from the compressor's low side, get the first dust from the air intake. Note how they are free from all deposits.

FREE CATALOG: "How to Save Money on Equipment Operation," a new booklet full of valuable information, is ready for you. Write or ask for your free copy today.

CALOL

TRADEMARK "CALOL" REG. U.S. PAT. OFF.

Now CALOL Multi-Service Oil cuts costs in all types of compressors



In crankcase and on cylinders, Calol Multi-Service Oil reduces wear and oil consumption —has cut consumption 20% in air compressors.

A. Oxidation-resistant compounds prevent formation of varnish. Detergent keeps contaminants suspended in oil, prevents foam.

B. Special compound assures "hot-spot" lubrication...covers surfaces rapidly.

Calol Multi-Service Oils also recommended for pumps, diesel engines, enclosed gears.

STANDARD TECHNICAL SERVICE checked this product performance. For expert help on lubrication or fuel problems, call your Standard Fuel and Lubricant Engineer or Representative; or write Standard Oil Company of California, 225 Bush St., San Francisco.

STANDARD OIL COMPANY OF CALIFORNIA

Here's Why rubber-will make

LETOURNEAU LET EQUIPMENT

WHY CRAWL WHEN YOU CAN RUN?

tired TOURNADOZER more money for YOU

① this job-proved dozer on rubber "runs" at 19 m.p.h.
Instead of "crawling" at 4 to 8 m.p.h., Tournadozer has top speed of 19 m.p.h. — maneuvers twice as fast — dozes twice as fast as the average crawler. It gives you reverse speeds up to 8 m.p.h. . . . cuts deadhead cycle time of most crawlers by 2.5 to 1. And, you get more use from these greater working speeds, because you have instant speed selection and can change into higher gears any time without shifting or stopping.

② big tires give less slowdown for soft, slippery going
Giant 21.00 x 25 low-pressure tires give you increased traction and flotation in all types of soil. 186 h.p. push on 4-wheel drive moves heavier loads. Instant speed change eliminates stops for shifting . . . keeps vital momentum . . . takes you through soft spots. Extra equipment includes down-pressure blade attachment for cutting through hard materials and more accurate grading . . . also torque converter for smoother, more effective application of power.

③ high-speed mobility puts waiting periods to work
All controls are easy to reach, easy to handle. Operator sits up front, ahead of diesel engine . . . can see where he's going . . . what he's doing. No stretching, no twisting, no end-of-day fatigue slowdown. Driving one of these high-speed Tournadozers is easier than driving a truck . . . and much less work.

④ drives via highway on job-to-job moves
Tournadozer drives cross-country, along tracks, over highways at speeds up to 19 m.p.h. No blocking, no waiting for trailer, no loading or unloading delays. Big tires prevent damage to pavement, curbing, tracks, etc. Multi-disc 4-wheel air brakes (2822 sq. in., total braking surface) and fingertip electric steering control give operator confidence to use top speeds while traveling or when dozing over edge of bank.

⑤ is easy to operate . . . easy on the operator
When needed on scattered odd jobs, operator just hops on this big dozer . . . and drives down paved right-of-way or across the pit to his next assignment. One Tournadozer frequently handles clean-up for 3 or more shovels . . . often maintains widely-scattered dump areas, as well. Pushers often do road maintenance during normal waiting periods.

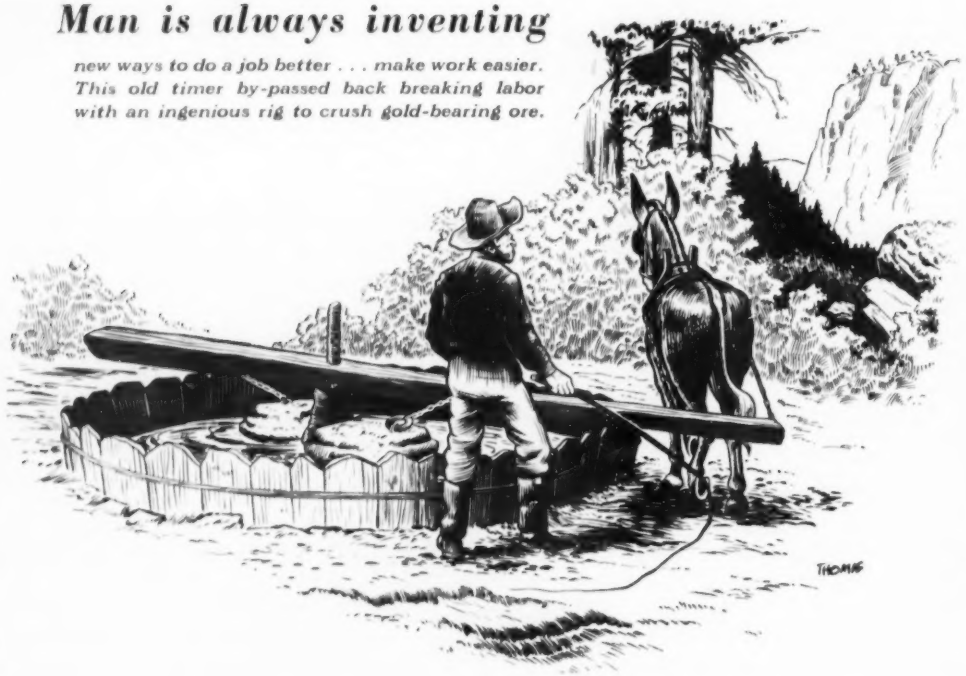
⑥ works and earns during the off-season
Winter or summer, it's easy to keep Tournadozer working and earning. Coal stockpiling, snow plowing, railroad switching are particularly good tasks for the "C". Just use standard Bulldozer blade or any of 9 auxiliary tools — including V-type Snow Plow, Angledozer, Side-Boom Crane, Logging Winch, Rooter or Scraper. With each unit, Tournadozer's high speeds and rubber-tired mobility will pay off in more work done.

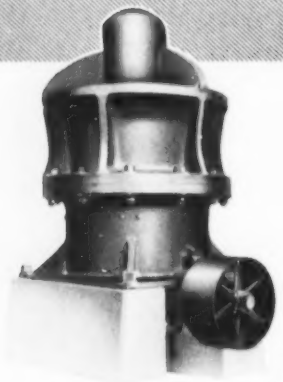
R. G. LeTOURNEAU, INC.

Peoria, Illinois

Man is always inventing

new ways to do a job better . . . make work easier. This old timer by-passed back breaking labor with an ingenious rig to crush gold-bearing ore.





The Traylor TY Reduction Crusher incorporates maximum efficiency with easy maintenance for top performance on the job. Ask for Bulletin 6112 for complete details.

The mining industry is famous for its ingenuity in finding ways to speed production while obtaining a better product. For 50 years, Traylor has fostered this ability by constantly improving crushing machinery. As in the past, so in the future, each year brings new methods—and new problems—to the industry. Mining men know that experience is their best source for solving these problems. Traylor has experience . . . half a century of it.

OUR GOLDEN ANNIVERSARY YEAR

1902 1952

TRAYLOR ENGINEERING & MANUFACTURING CO.

1423 MILL ST., ALLENTOWN, PA.

SALES OFFICES: New York, Chicago, Los Angeles, San Francisco

Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P. Q.

a **Traylor** *leads to greater profits*

cut tonnage costs

with P&H ELECTRIC SHOVELS

In more and more locations these ultra-modern P&H machines are taking over the jobs that call for big production — steady digging. Users who know their cost accounting come back for more — for one proved reason . . . *lower tonnage costs.*

Contributing factors are these:

P&H Magnetorque* Hoist Drive powers hoisting motions electro-magnetically, gives you snappier dipper action — eliminates hoist generator, slip friction clutch and other troublesome mechanical devices.

P&H stepless power regulation is smooth and accurate — with no control fingers or contactors to give you trouble.

Independent propel, all-welded construction, filtered air cab and other modern refinements have led the way to more dependable production on a year-in, year-out basis.

If you seek lower tonnage costs in open pit work, let us tell you where you can see a P&H Electric Shovel in action. Ask about a P&H today.

*T.M. of Harnischfeger Corporation for electro-magnetic type clutch

Every third P & H Electric Shovel sold is a repeat order

HARNISCHFEGER
CORPORATION

2400 East Imperial Highway • Los Angeles 59, California

POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FABRICATED HOMES

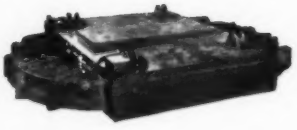
Which Answers Your Tramp Iron Problem BEST?

MAGNETIC PULLEYS?

Powerful, air cooled electro magnetic pulleys are ideal where well loaded conveyor belts are used. Installed as head drive pulley, tramp iron is discharged automatically. Low operating cost, long life and extreme power characterize this workhouse of the Dings line. Catalog C-1001A tells you why this magnet is exceptionally efficient.

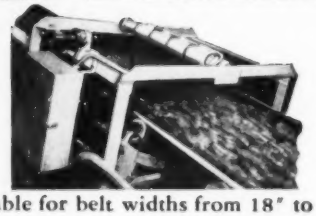
Dings *non-electric, self-energized* Perma Pulley magnets are recommended where burden depths do not exceed 3". Within this range, these are the magnets to use because of their unsurpassed concentration of magnetic strength near the surface. Catalog C-1007A.

SUSPENDED RECTANGULARS?



Power close and power that searches down as deep as 30" to yank tramp iron out. If the Dings RM rectangular won't do it, it can't be done. Triple pole, double gap design. Install horizontally, vertically or at an angle above belt conveyors or in chutes. Self-cleaning fully automatic models also available. Write for details.

MAGNETIC DETECTOR?



The Dings Magnetic Detector instantly signals when any magnetic object large enough to be damaging passes through the detector zone. Can be hooked up to sound an alarm and stop the belt. Ideal protection for crushers, grinders, pulverizers, etc., where belt speeds are so excessive or burden depths so great no magnetic separator can function successfully. Detectors are available for belt widths from 18" to 72". Two types are available. One employs an electro magnet and the other, a permanent magnet. Performance of the two is comparable.

Magnets shown here are available in size ranges for most applications. Special magnets can be made for any application. Write today for recommendations.

DINGS MAGNETIC SEPARATOR CO.
4719 W. Electric Ave., Milwaukee 46, Wis.

Dings Certified
MAGNETIC STRENGTH

GIDDYUP! WHOA! BACK UP!
This was one way of bringing ore to the surface back around 1890. Three men and two horses—and a mighty small bucket!

An enlargement of this photo suitable for framing is yours for the asking.

Times Have Changed...

Horse-drawn blasting practices are out-of-date, too!

Fantastic, isn't it, that primitive methods of mining such as the horse-drawn hoist could ever have shown a profit.

But it's equally fantastic that some mine operators who wouldn't think of having anything but the latest mechanical equipment forget that blasting practices also must be kept up to date.

The milli-second delay blasting technique developed by Atlas in the ROCKMASTER Blasting System has practically revolutionized theories of explosives action. ROCKMASTER makes the most of explosives energy . . . gives control over breakage, throw, noise and vibration never before possible. And sizeable reductions in explosives load and number of holes per round!

Send for the free 20-page ROCKMASTER book today to see how times have changed and have made possible really better blasting.

Offices in Principal Cities

ATLAS EXPLOSIVES
"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

SAN FRANCISCO 4, CAL. ATLAS POWDER COMPANY SEATTLE 1, WASH.

GRAB SAMPLES From the Mail

Breath of Hope for Argentine Miners—

Dear Sir:

It occurred to me that you would be interested in the enclosed copy of INDUSTRIA MINERA, the Argentine mining publication. The February edition was dedicated to the Leader and Comrade Evita who have appealed to the miners for increased production.

Herewith is a translation of the editor's dedication of this issue as it appears on page 5. Your readers may be interested in this method of getting out more ore.

"As a symbol on which the Argentine spirit fixes all its hopes, as a deep breath from the deepest heart of the Nation, the front cover of this issue of Industria Minera reaches the hands of the miners.

"Comrade Evita and General Peron; General Peron and Comrade Evita: distinguished master and distinguished pupil. It is our intention to dedicate our front cover as a breath of hope for all miners; as an impulse to comply with the word of the Leader: 'Produce the maximum; Consume without dissipating.'

"In our pages we give, in clear terms, the words of General Peron. There are thoughts there directed to agriculture; his words go to that element because of the circumstances involved.

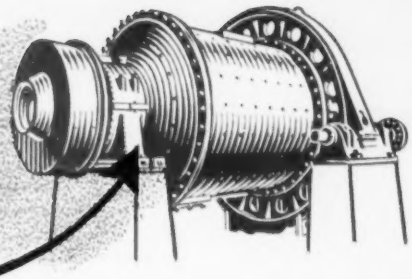
"To miners, everything is implicit. The General knows that the effort led by the Argentine Chamber of Mines is not only a loyal but a faithful interpreter of his urges. Nothing, nor anybody, can cause the miners' movement to stray from that path. The future of mining is of one body with the General's government itself. Without the Peron Doctrine in power, without Peron holding the helm of State, without Comrade Evita carrying out her intense and loving efforts, our native mining industry, our true mining industry, the industry of small and medium-sized operations, could not exist. We would again become "laborers without pay" of the great foreign trusts and cartels.

"This, all miners know. They know it, and because they know it, the small and medium-sized mining industry has always marched beside the Leader and always complied with his decrees."

R. Rodriguez

!! - - Ed.

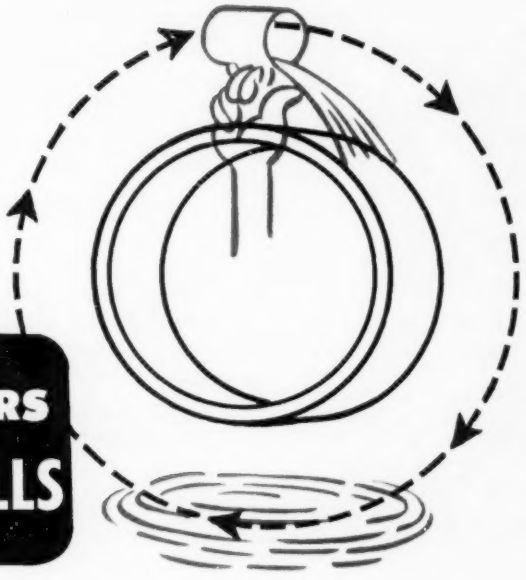
"Inside Story"



of Allis-Chalmers Oil Lubricated Trunnion Bearing...

AN OILING BUCKET inside this Allis-Chalmers trunnion bearing revolves with the trunnion . . . lifts oil from the reservoir in the bottom of the bearing housing to an oil distributing pan above the bearing. From here it floods down onto the bearing, lubricating the full face of the bearing uniformly and continuously.

You'll always have the comforting assurance that the all-important trunnion bearing on your mill is being dependably lubricated. This assured protection of internal lubrication is standard on all Allis-Chalmers oil lubricated bearings — even on installations where a separate external oiling system is used. A-3722



ALLIS-CHALMERS
GRINDING MILLS

These protective features of A-C trunnion bearings also give you savings in power and maintenance —

- ★ An improved seal keeps dirt out of oil and has been designed to provide for mill expansion.
- ★ A hand operated, high pressure lubricant pump "floats" the mill after shut-down . . . eliminates dry starting.
- ★ If desired, an external system for filtering and cooling can be added to the internal oiling system.

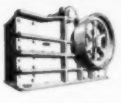
Get more facts from the Allis-Chalmers representative in your area, or write for Bulletin 07B6718A. Allis-Chalmers, Milwaukee 1, Wis.

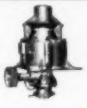
ALLIS-CHALMERS

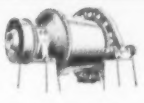
Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.


Hammermills


Vibrating Screens


Jaw Crushers


Gyratory Crushers


Grinding Mills


Kilns, Coolers, Dryers

Steady heart

A "Cat" Diesel D318 Engine is the steady heart of this Lorain Shovel which moves 800 tons of material every 16-hour working day. The shovel is moving ore in a bauxite mine in Sweet Home, Ark.

Nothing compares with durable "Caterpillar" Diesel Engines, reports owner L. D. Riffe, vice-president of Riffe Construction Co., Sweet Home. A survey of the field has convinced him that he made a wise selection.

"I have watched other people's equipment plus my own and I find that the 'Caterpillar' Engine is the only one," he explains.

It's no accident that the "Cat" Diesels stand out by comparison. Each power unit is thoroughly dynamometer tested to assure complete horsepower output. They are built for hard labor with low fuel consumption and low depreciation. They are compact—easy to install and just as easy to operate.

A complete line of "Caterpillar" Diesels enables you to select the right size engine for your job. Specify "Cat" Engines for the equipment you buy. And, let your "Caterpillar" Dealer help you repower your present machines, today.

CATERPILLAR TRACTOR CO., San Leandro, Calif.; Peoria, Ill.

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

MINING WORLD

and the export edition

WORLD MINING

A Miller Freeman Publication

Published monthly except in April when publication is semi-monthly

JULY, 1952

VOL. 14 No. 8

Cover Circle: New World's McCoy iron mine in Nevada uses a three-quarter-yard Unit Diesel shovel to load its high-grade magnetite ore from the development cut for shipment to Japanese steel mills.

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DRIFTS AND CROSSCUTS

Gold Cases Have a Long Road Ahead

Those gold mine owners who suffered damages from World War II shut-downs due to the War Production Board's gold mine closing order (Limitation Order L-208) have scored an initial victory in the recent ruling of the United States Court of Claims in Washington, D. C.

In rendering their decision, the Claims Court Judges stated that "they had not been asked nor had they the power to pass on the wisdom of Order L-208. The gold mining company had not contended that the Board lacked the power to issue the Order or that the Order was invalid. The question involved was whether, on the facts alleged, the Order went beyond what was required by the exigency of the situation existing in October 1942; bore no reasonable relation to its ostensible purpose of concern for the public safety in time of war, and was arbitrary as to constitute a taking of valuable property rights belonging to plaintiff. (See Louisville Bank v. Radford, 295 U. S. 555)."

The decision rendered in the suits brought by the Homestake Mining Company, Idaho Maryland Mines Corporation, and the Central Eureka Mining Company, however, may well be only the start of the gold miners case as it is generally understood that the Department of Justice attorneys will move for a new trial. If such a motion is filed and approved by the court, it is doubtful if the court will set a retrial date until next October or November. It is quite possible that the cases will finally end up in the Supreme Court in about a year from now.

An even longer and more difficult period apparently lies ahead for many gold miners and ex-gold miners. It must be realized that only 17 claimants filed with the Court of Claims prior to the expiration of the Statute of Limitations; in order to accord the hundreds of other potential claimants an opportunity for a day in Court, it will be necessary to waive the operation of the Statute by an act of the Congress of the United States.

George Nugent, chairman of the United States Gold Committee, Inc. and Robert S. Palmer, executive director of the Colorado Mining Association, conferred with Senator Pat McCarran of Nevada and Congressman Clair Engle of California regarding the Statute of Limitations. Subsequently, on May 19 (legislative day, May 12), 1952, Senator McCarran introduced Senate Bill S. 3195, and Congressman Engle introduced the identical bill (H. R. 7969) on May 23rd. These Bills are as follows:

"Granting jurisdiction to the Court of Claims to hear, determine, and render judgement upon certain claims.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the United States Court of Claims be, and hereby is, given jurisdiction to hear, determine, and render judgement, notwithstanding any statute of limitations, laches, or lapse of time, on the claim of any owner or operator of a gold mine or gold placer operation for losses incurred allegedly because of the closing or curtailment or prevention of operations of such mine or placer operation as a result of the restrictions imposed by War Production Board Limitation Order L-208 during the effective life thereof: *Provided*, that actions on such claims shall be brought within one year from the date this Act becomes effective.

At this writing, the Senate has passed and sent to the House its bill waiving the Statute of Limitations.

The entire gold mining industry owes a debt of gratitude to those untiring workers who have done so much to seek justice for all gold miners regardless of size or congressional association.

G. O. A., Jr.

Time to light another candle...

It was 1802... 150 years ago... when Eleuthère Irénée du Pont de Nemours began making black powder in a fieldstone mill along the banks of Brandywine Creek near Wilmington, Delaware.

Research... experimentation... even then held a place of high concern in the development of a product soon known for its superior quality. From that humble beginning, so significant of the way of life in this new country, research has constantly played an important part in the colorful history of the Du Pont Company.

ONE HUNDRED YEARS passed. In 1902 . . . now half a century removed . . . Du Pont established Eastern Laboratory at Gibbstown, New Jersey. It was one of the first in the United States to be entirely devoted to industrial research. Here, old products were improved; new ones developed and perfected. And as always, consumers, technical representatives and the laboratory's chemists, physicists and engineers cooperated in the work. The keynote was progress. Today, such research has become an indispensable, integral part of Du Pont's continuing program of product improvement. Laboratory facilities now embrace over 75 buildings, a proving ground of some 3600 acres and an experimental tunnel and mine.

MANY INDUSTRIES have benefited from these untiring efforts. In the field of ore mining alone, an imposing list of product developments contributed largely to the advancement of the industry. Men now long engaged in the mining of ore may well recall the introduction of some of these. Younger men will recognize other, newer products of Du Pont Explosives Research. Among these contributions to a basic industry are the following:

DU PONT PRODUCTS OF EXPLOSIVES RESEARCH

- Low-freezing dynamites
- Ammonium nitrate dynamite
- Low-density ammonium nitrate dynamites
- Ammonium nitrate Gelatins
- Minimum fumes Gelatins
- Hi-Velocity Gelatins
- "Nitramon"
- "Nitramex"
- Electric blasting cap shunts
- Tetryl caps
- All-metal delays
- Rubber plugs in electric blasting caps
- Shielded shunts
- Plastic insulation on electric blasting cap wires
- Static resistant electric blasting caps
- Superior Crimper
- Detect-A-Meter
- Safety Blasting Switch
- Blasting Timer
- Primacord Boosters
- Primacord "MS" Connectors
- Condenser Discharge Blasting Machine

BUT what is new today may become obsolete tomorrow, next week or next year. That is why the job of research never ends. And constant research is why Du Pont Explosives have earned world-wide recognition. For 150 years they have met the specialized needs of the mining industries and of the men whose work requires dependable performance in a wide variety of products. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

Du Pont Explosives

Blasting Supplies and Accessories

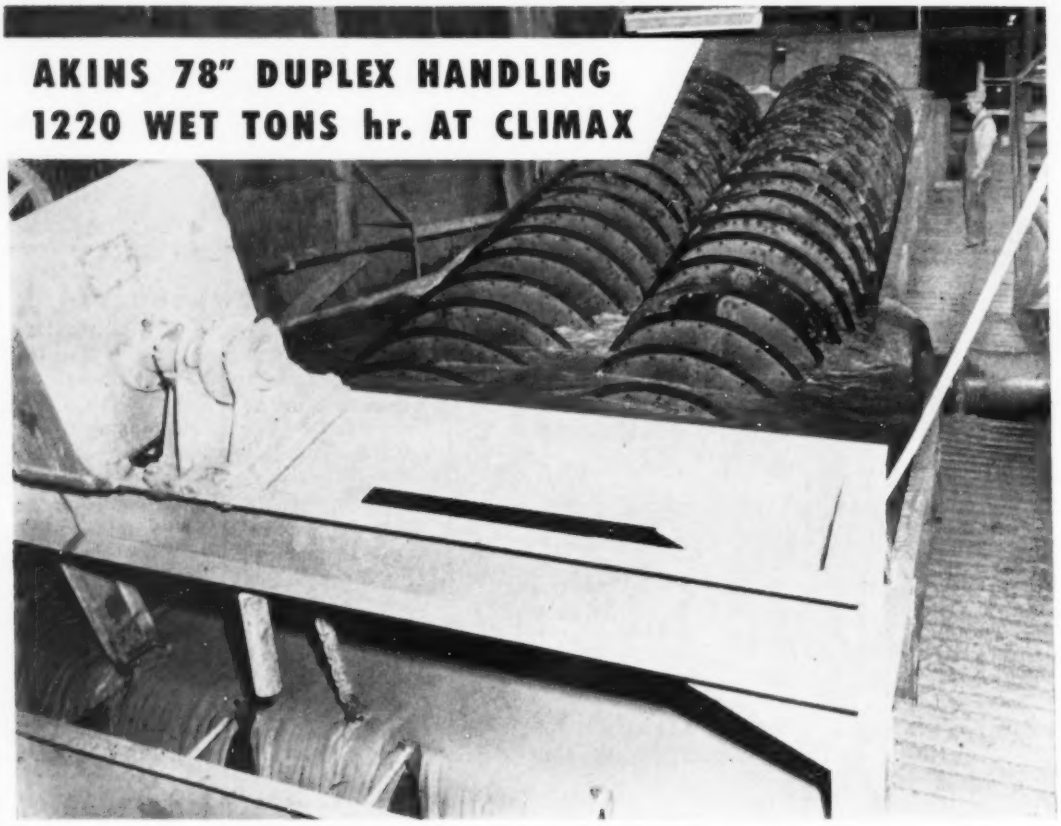
DU PONT

REG. U.S. PAT. OFF.

150th Anniversary

BETTER THINGS FOR BETTER LIVING ..THROUGH CHEMISTRY

AKINS 78" DUPLEX HANDLING 1220 WET TONS hr. AT CLIMAX



The Climax Molybdenum Corporation was confronted with the problem of not having sufficient room in the mill for enough classifiers to make a separation of sands and slime prior to final disposition of tailings from the by-products plant.

To answer the problem CIW engineers designed the largest classifier ever built, a 78" duplex, to go in the space available. Feed averages 1220 wet tons hr. @ 31% solids, overflowing 846 tons hr. @ 13% solids, with sand discharge averaging 375 tons hr. @ 72% solids. Classifier feed is 44% plus 65 mesh, sand discharge 65% plus 65 mesh and overflow 1% plus 65 mesh.

Like many other successful mining companies, Climax buys Akins exclusively.

NEW TYPE BEARING AND LIFTING DEVICE

This 78" unit includes all the outstanding features of the Akins in addition to a new type bearing and lifting device designed to permit construction of such a large classifier.

LET OUR EXPERIENCED CLASSIFICATION ENGINEERS HELP YOU ON YOUR PROBLEMS

COLORADO IRON WORKS CO.

DENVER 2, COLORADO
REPRESENTATIVES

Canadian Locomotive Co., Ltd., Kingston, Ont., Can., Licensed Manufacturer—Head, Wrightson & Co., Ltd., Stockton on Tees, Eng., Licensed Manufacturer—John Carruthers & Co., (Pty.) Ltd., Sydney, Aus., Licensed Manufacturer—Head, Wrightson & Co., S. A., (Pty.) Ltd., Johannesburg, Licensed Manufacturer—Edw. J. Nell Co., Manila, P. I., Sales Agents—Wright Bros., Credit Foncier Bldg., Vancouver, British Columbia, Sales Agents.

CAPITOL CONCENTRATES

REQUESTS INFORMATION ON GOLD SALES & PURCHASES

Senator William F. Knowland of California is digging into the subject of United States gold stocks and the purchases and sales of that metal. He is hoping to gather data which will enable him to do something about the present gold price which obviously is far out of line with other prices.

Knowland has asked the Treasury Department to furnish him with information concerning all purchases and sales of gold by the U. S. government for each year from January 1, 1933, through December 31, 1951. He requested that this information show:

1. Purchases of gold from newly mined sources in the U. S. and from new production, if any, from other countries of the world;
2. Purchases and sales from and to other governments;
3. Sales to industrial establishments for manufacturing purposes;
4. The amount of gold turned in each year by U. S. citizens and other residents, including gold coin and bullion other than newly mined gold;
5. Whether the Treasury has bought or sold gold above $35 per ounce;
6. The price of gold on the foreign market in Europe and Asia for each of the years, expressed in terms of U. S. dollars;
7. Data as to sales of gold by other countries at a price higher than $35 per ounce and whether such sales are still being made; and
8. Under what conditions sales of gold are made by the Treasury to foreign governments, and what agreements or understandings exist relative to the resale of such gold stocks and the reporting of such transactions to the Treasury.

If answered honestly, Senator Knowland is likely to have some startling information.

• *Senate Approves Coal Mine Inspection*

The Neely coal mine inspection bill, S. 1310, passed the Senate with very little resistance. This bill would give the U. S. Bureau of Mines the authority to make safety rules and regulations and, if necessary, close a mine for noncompliance.

During the debate the Senate was assured that the bill is not designed to deprive any state of any right. It superimposes federal inspection upon state inspection. It was also brought out that if an unreasonable rule or regulation were made, the owners of the mines could, under the Administrative Procedures Act, apply to the courts for relief.

Although the bill applies only to coal mines, metal-mine operators, in whose mines very few accidents occur, are afraid that by the mere device of striking the word "coal" the bill can readily be made applicable to all mines and thus extend the long arm of the federal bureaucracy.

• *Still No Provision for Development Loans*

Although DMEA can grant exploration projects and DMPA can certify mines for production loans, no machinery yet has been set up to make development loans. It is quite possible to make an important discovery through an exploration project and be left with absolutely nowhere to go from there unless the operator, himself, has the money to block out ore as collateral for an RFC defense loan. This extraordinary situation has been known to the agencies since DMA was set up in the early days of the Defense Production Act, but they are still only talking about it.

• *It's A Rumor*

There is a rumor in Washington to the effect that the President of Chile telephoned President Truman and stated flatly he would not settle for less than 33.5 cents a pound for the Chilean copper production.

• *Cabinet Post For Mining Endorsed*

The theory of the Baring bill to set up the cabinet post of Secretary of Natural Resources is supported vigorously in the report, Circular Number 39, issued by the School of Mineral Industries of the Pennsylvania State College. It says: "The development of a sound national and international mineral policy will depend largely on the establishment of a sound governmental organization. This governmental organization should be independent and centralized in scope." In criticizing the present set-up, it is noted that "there is a continual grouping and regrouping of organizations in Washington so that no one of them has a clear concept of duties and responsibilities."

• *Seek Specific Over-Market Price Authority*

Senators Carl Hayden and Ernest McFarland of Arizona, James E. Murray of Montana, and Warren G. Magnussen of Washington are sponsoring an amendment to the Defense Production Act extension bill which would specifically authorize the government to make minerals production contracts at over-ceiling or over-market prices when necessary. It is felt that the wording in the present act is cloudy and consequently retarding production from new sources.

While such authority already exists under the "Buy American" clause of the present Defense Production Act, it has been used very sparingly for domestic production. Yet government agencies do not hesitate to make generous over-market price contracts with foreign countries and foreign producers. The new producers thus created in foreign countries might well be a great asset to the enemy in case of armed conflict.

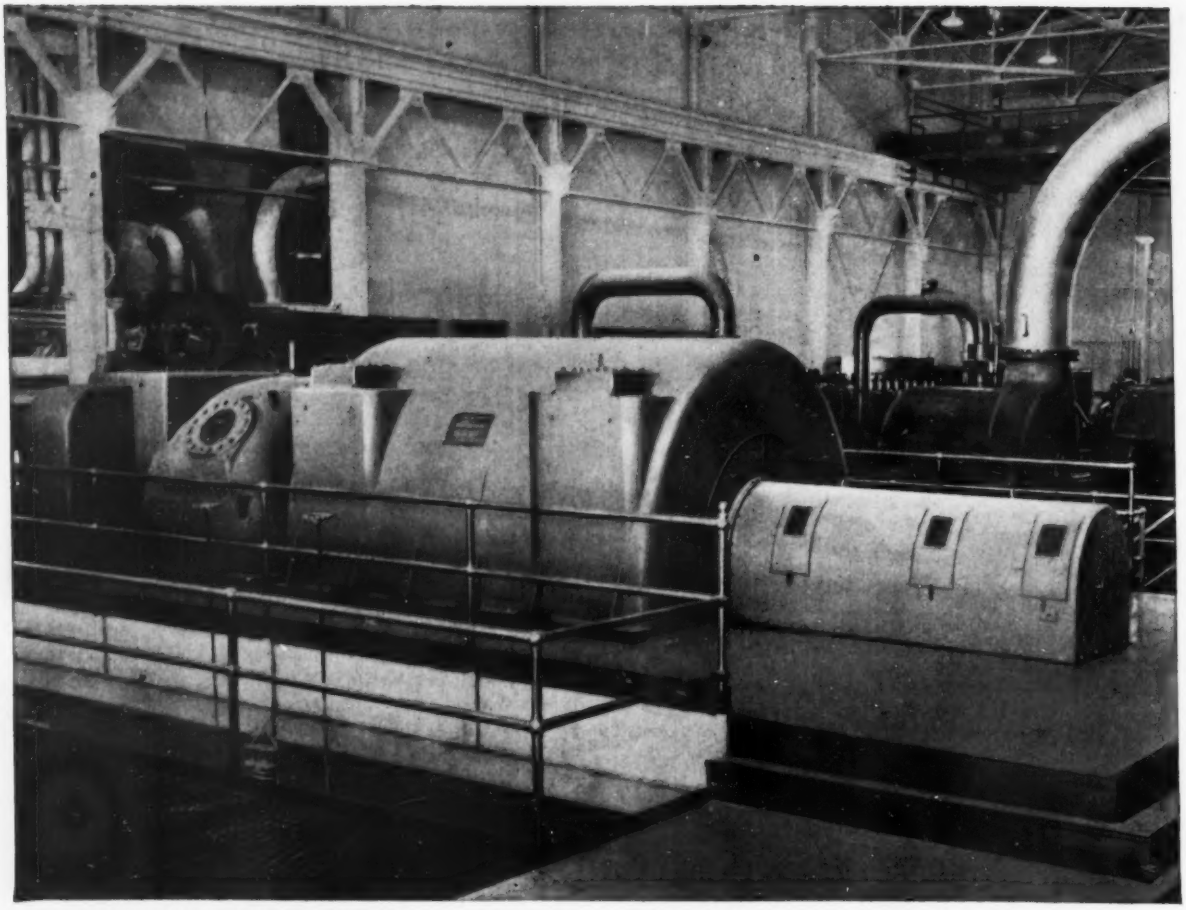
• *Price Ceilings On Imports Relaxed*

Canadian copper producers are anticipating higher prices for their exports to the United States as a result of the United States move to relax price ceilings on imports, according to some of their production officials.

Canadian domestic copper prices may rise, they said, but the situation likely will be so confused for the next few weeks that no one will be certain just where prices will settle.

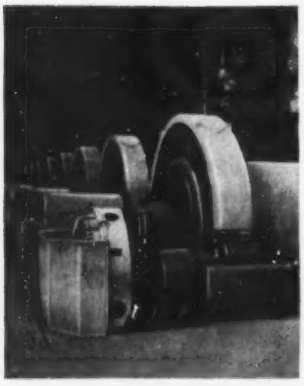
The officials were commenting on a Washington dispatch announcing the United States move designed to restore the flow of Chilean copper to the U. S. Shipments were halted by Chile in an effort to get higher prices.

Continued on Page 24

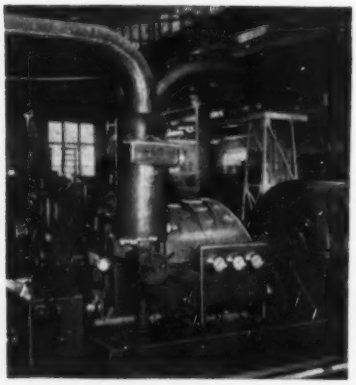


1 **NEW G-E STEAM TURBINE-GENERATOR** generates high-voltage power for this copper company's concentrating and smelting plant. Rated at 10,000 kw, 3600 rpm, the single-stage unit replaces an older 6000-kw unit which generated at 480 volts. Like every G-E turbine-generator, it is custom-built from standard components to meet specific operating conditions.

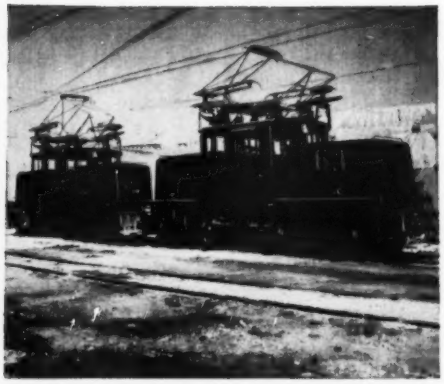
Power system modernized for



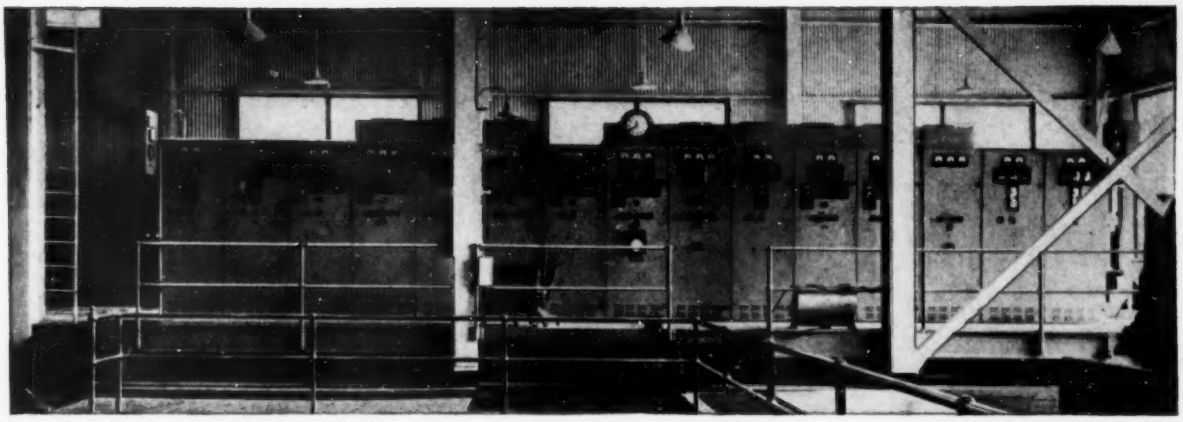
POWER-FACTOR IMPROVEMENT is provided by 28 200-hp synchronous motors driving plant's ball mills.



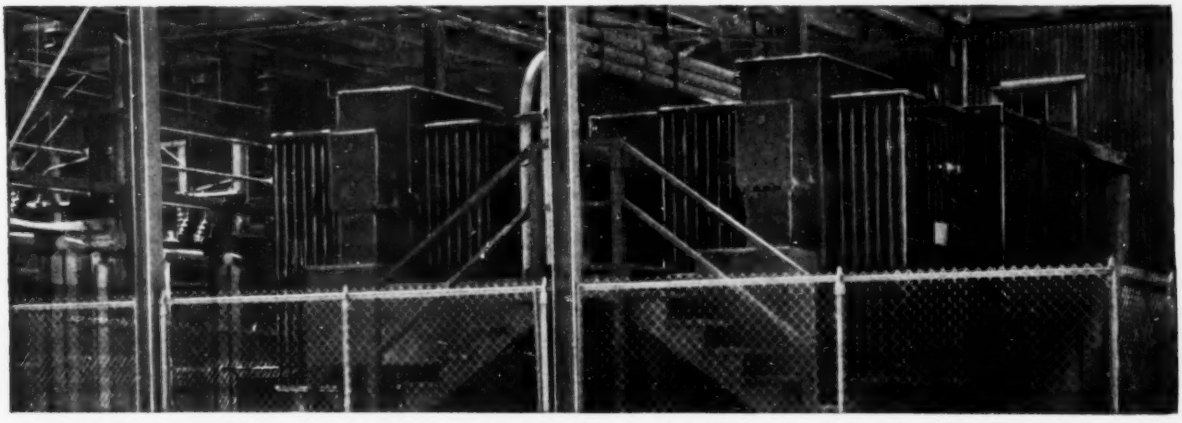
MECHANICAL POWER to drive two turboblowers is generated from process steam by 1915-hp G-E mechanical-drive turbines.



LOW-COST HAULAGE from the copper plant's open pit mine 15 miles away is provided by these two G-E 750-volt 85-ton electric locomotives.



2 **NEW G-E METAL-CLAD SWITCHGEAR** distributes high-voltage power to load-center substations in electrical load areas. These co-ordinated units are shipped completely assembled and ready for installation. Their compact design saves floor space.



3 **NEW G-E LOAD-CENTER SUBSTATIONS,** completely metal-enclosed, step down power from primary voltage to 480-v for use in the ball mill area. High voltage power distribution to load centers reduces voltage drop and cuts power losses.

more efficient distribution

Copper plant increases capacity by adding G-E turbine, switchgear and load-center substations to existing power system

As part of a continuing modernization program at its concentrating and smelting plant, a large copper company in the Southwest recently installed new General Electric high-voltage power generation and distribution equipment. With these new facilities, power is generated and distributed the modern, high-voltage way. Result: increased protection against shutdowns, lower power-distribution cost.

You, too, can benefit from the kind of G-E application engineering that went into this installation. Call your nearest G-E office and ask for a mining specialist. *General Electric Company, Schenectady 5, New York.* 660-25

Engineered electric systems for the copper industry

GENERAL ELECTRIC

Capitol Concentrates

Continued from page 21

Canada produces about 245,000 tons of copper a year and exports about 100,000 tons, mostly to the U. S. Part of this copper is sold under contract at a fixed price and part at the U. S. import price, which may fluctuate from time to time.

Canadian mining has jumped forward by leaps and bounds since that country put in a "tax incentive" program designed to encourage new capital to go into risk enterprises. Thus Canada is able to capitalize on the high tax program of this country and the unwillingness of U. S. government officials and agencies to relax rigid price ceilings, even when it can be shown that increasing costs require such relaxation.

• *Something To Think About*

Reports from Washington estimate that by 1956 the monthly supply of copper available in the United States will reach 150,000 tons. This is domestic production and normal imports from friendly countries. Based on historical comparisons, this supply of copper would be sufficient to support a Federal Reserve Board index of industrial production of 270, an increase of 24 percent above present levels and 45 percent above the first half of 1950. Expansion projects now under way in this country and friendly foreign countries should yield about 205,000 tons a year more than at present and this increase should start about 1954.

Now the problem that concerns the copper companies, the communities in which the larger mines operate, and the states which derive a major part of their support from mining, is this: What the heck are we going to do with all that copper if the Washington bureaucrats get their way and switch copper users over to the use of aluminum? Such conversion has gone a long way already and is progressing rapidly. The states of Arizona, Montana, Utah, Nevada, and New Mexico may be sitting out on a limb when the present emergency is over and the nation returns to normal requirements. Only the lowest cost mines could continue to do business.

These states are not producers of aluminum. However, many of the copper mining companies can convert a portion of their fabricating facilities to the use of aluminum —and have been doing so. Thus they would continue to be in business, but the states in which their copper mines once existed might well be looking around for other sources of revenue and employment. This is something to think about when considering putting extra cost-loads onto the copper mines.

COMING CONVENTIONS

September 8 through 15, 1952. XIX Session INTERNATIONAL GEOLOGIC CONGRESS, Algiers, Algeria.

September 22 through 25, 1952. WESTERN DIVISION, AMC, EXPOSITION, Shirley Savoy Hotel, Denver, Colorado.

November 6 to 8, 1952. FIRST ANNUAL SOUTHWEST MINERAL CONFERENCE, sponsored by the New Mexico Mining Association and the Southwest International Mining Association. Alvarado Hotel, Albuquerque, New Mexico.

December 5 and 6, 1952. NORTHWEST MINING ASSOCIATION, annual convention, Davenport Hotel, Spokane, Washington.

INTERNATIONAL PANORAMA

WASHINGTON—Current military and atomic energy consumption of available metals is: steel, 20 percent; copper, 33 percent; nickel, 70 percent; and cobalt, 73 percent.

OTTAWA—The Canadian Geological Survey is making the first geologic reconnaissance survey of 100,000 square miles west of Hudson Bay. One airplane and two helicopters are being used.

LEOPOLDVILLE—Shipments of high grade copper (malachite) ore to Belgium smelters have started from the recently discovered Bemba Kilenda mine.

BUTTE—Minerals Engineering Company has started a $111,280 tungsten exploration program at its Lost Creek mine. The DMEA is supplying 75 percent of the cost under an exploration contract with the company.

FORT SASKATCHEWAN—Construction of Sheritt Gordon Mines, Ltd.'s new $17,000,000 nickel-cobalt refinery has been started.

CHICAGO—The Fansteel Metallurgical Corporation is doubling plant capacity to produce potassium tantalum fluoride under a five-year contract with the DMPA. Increased columbium output will be made from the tantalite residues from the plant.

TELAVIV—The Belgian firm, Sociate Belgo-Continental des Minerais and Metaux has signed a contract with the Israel Mining Industries Limited for mine development and plant construction at the Negev copper mine.

CUMBERLAND, ENGLAND—Solway Chemicals, Ltd., subsidiary of Marchon Products, will build a $5,600,000 plant to manufacture sulphuric acid from anhydrite.

JAMAICA—The first commercial shipment of bauxite has been made from the Reynolds Jamaica Mines. 11,000 tons have been shipped to the U. S. for eventual use at the Hurricane Creek, Arkansas, plant of the Reynolds Metals Company.

DUTCH GUIANA—The International Bank for Reconstruction and Development has recommended a $53,000,000 program to produce aluminum in Dutch Guiana. A special mission reports that a ten-year development program could increase the country's aluminum production to 3,000,000 tons annually.

NIGERIA—Discovery of one of the world's largest deposits of uranium has been reported here with 700,000 tons of ore to the vertical foot.

OTTAWA—The Canadian Minister of Production has released zinc, lead, and cadmium from the list of controlled metals.

WASHINGTON—The government has set up a guaranteed purchase program with an incentive bonus for producers only, in order to encourage development and production of columbium and tantalum ore. Fansteel Metallurgical Corporation of North Chicago, Illinois has been designated as the government's purchasing agent.

BOLIVIA—The Reconstruction Finance Corporation has agreed to buy Bolivian tin-in-concentrates from the Hochschild group and Aramayo Mines. Considerable tonnages are stored in South American warehouses and would be bought at $1.17½ f.o.b. Chilean ports.

HENDERSON, NEVADA—Manganese, Inc., has started manganese ore at its Three Kids mine. The company's new treatment plant will be in operation shortly to produce high-grade nodules.

WASHINGTON—An additional 22,000 tons of copper has been withdrawn from the national defense stockpile. Total tonnage withdrawn to date is 77,000.

BUTTE—Anaconda Copper Mining Company is planning development of a second low grade ore project similar in size to the famed "Greater Butte Project."

PARIS—The Organization for European Economic Cooperation has banned the use of nickel and nickel alloys in 500 products to conserve the metal for strategic uses.

LONDON—Roan Antelope Copper Mines, Ltd., has made application to the treasurer of the United Kingdom for permission to transfer headquarters to Northern Rhodesia.

WASHINGTON—The Defense Materials Procurement Agency has received 1,622 applications for government aid to mining projects. Of these 369 have been approved, 605 denied, 405 have been withdrawn, and 193 are in process.

BELGIAN CONGO—About 2,000,000,000 kilowatts of electric power annually is expected to be available for the industries in Katanga within the next five years.

PHILADELPHIA—Foote Mineral Company is planning a $3,000,000 expansion program to more than double the present U.S. capacity for lithium chemicals. The program includes construction of a processing plant, construction of facilities for quarrying and processing limestone, and tripling of output of lithium ore.

PLATTEVILLE, WISCONSIN—The New Jersey Zinc Company has opened an exploration office to serve as a base for exploring for zinc deposits in leased properties located between Shullsburg and Platteville.

STAR LAKE, NEW YORK—Jones & Laughlin Ore Company has merged with its parent company and will now be known as Jones & Laughlin Steel Corporation, New York Ore Division. Operations at Ishpeming, Michigan will be known as the Michigan Ore Division.

OKLAHOMA CITY—The mining properties and equipment of the Navajo Uranium Company have been acquired by the Kerr-McGee Oil Industries, Inc., including all uranium rights held by the company on the Navajo Indian Reservation.

RIO DE JANEIRO—The Brazilian government has established a special Strategic Materials Export Board to control exports of any material classified as strategic by the National Security Council.

U.S. Offers Bonus For Columbium and Tantalum

To encourage production of columbium and tantalum ores, a government-guaranteed purchase program has been established carrying with it an incentive bonus that will almost double the present market price for these metals. The bonus will be paid only to the actual producer of the ore, in the hope of stimulating development of new deposits.

Fansteel Metallurgical Corporation of North Chicago, Illinois has been authorized as the government's purchasing agent and all offers should be made to them, not to the Defense Materials Procurement Agency. The price schedule establishes a base price of $1.40 per pound of combined pentoxide for ore and concentrates containing a minimum of 35 percent of columbium and tantalum pentoxide. Deliveries must be in lots of not less than 2,000 pounds of acceptable grade material.

The program will last until December 31, 1956, or until the government has acquired 15,000,000 pounds of the metals it wants, whichever occurs first.

Three Essential Metals Decontrolled by Canada

Immediate decontrol of zinc, lead, and cadmium in Canada has been announced by the Minister of Production. Control measures were invoked a year ago to prevent excessive stockpiling and to regulate the flow of these metals to commercial industries and defense factories. With the general easing in the supply of these metals and in line with recent decontrol measures in the United States, it was decided to release zinc, lead, and cadmium from the restrictive list. Other essential metals, such as steel, nickel, cobalt, copper, and tungsten, are still under the control of the Defense Production Department.

Large Uranium Deposit Reported in Nigeria

One of the world's largest uranium deposits is reported to have been found in Nigeria. The field is said to cover about 200 acres and to have 700,000 tons of ore to the vertical foot. Depth has not been disclosed.

The Nigerian government owns the land but the mining rights belong to the British Crown. It is considered likely that British mining companies will be invited to bid for the rights and that the profit will be split with the Crown.

If extraction of uranium and niobium can be accomplished economically, a plant capable of handling 3,000 tons of ore daily is estimated to be able to produce about 100 tons of uranium and 2,000 tons of niobium annually from the field.

Loading iron ore at the Dodge Construction Company's open pit operations with two 1½-cubic-yard Northwest shovels.

By the Staff,
New World Exploration, Research and Development Corporation
Reno, Nevada

NEVADA MINING'S NEW LOOK

In One Year, Eight Open-Pit Iron Ore Mines Have Been Developed and Now Produce 150,000 Long Tons of High-Grade Ore Monthly for Export to Japan

During the past year, the State of Nevada has experienced a new growth in the field of mining. Normally, one thinks of Nevada's mineral production in terms of copper, gold, silver, zinc, and lead. To these, iron ore must be added as a healthy newcomer. The impetus for this surge in mining activities has been provided by the demands of the Japanese steel industry for high-grade iron ore.

This new Japanese market has existed for somewhat less than one year. During this time, the mining industry of Nevada has developed a group of small open-pit iron mines capable of producing an estimated 150,000 long tons of iron ore per month. No particular open-pit operation dominates the Nevada production of iron ore, so an overall picture of the operating mines will provide the most up-to-date report of Nevada's newest mining scene.

Location

The eight operating pits described in this article are located in central and western Nevada. Their locations are shown in the accompanying map. Four of the eight mines are concentrated in the Lovelock area of Pershing County. The enlarged section shows the location of these mines in relation to the haulage roads that have been constructed.

Geology

In broad classification, all the iron deposits of Nevada are quite similar. They are a result of igneous processes and are apparently closely related to the general fabric of Cordilleran mineralization. The ore bodies consist of magnetite, hematite, or various mixtures of these minerals. The presence of octahedral crystals of hematite pseudomorphic after magnetite, observed near the Modarelli deposit, suggests that the primary mineralization was mainly magnetite. Of the deposits visited,

LEFT: Loading iron ore into a Ford dump truck from the main development bench at the McCoy pit. RIGHT: American Ore Corporation is mining this prominent ore outcrop.

two specific types were noted: replacement deposits in limestone, and deposits occurring in volcanic rocks.

The Minnesota and McCoy deposits are of the limestone replacement type. The Minnesota ore bodies occur in a massive limestone and are characteristically irregular in shape. The McCoy deposits replace a thin limestone bed in a quartzite formation and thereby have more uniform dimensions. The ore bodies occur as tabular lenses along the trend of the limestone bed for a distance exceeding 5,000 feet. The individual lenses are up to 500 feet long and 40 feet thick; they dip at a low to medium angle into the ridge formed by the quartzite formation. In both deposits, the ore is a hard massive magnetite. Shipments from the McCoy operation have averaged 61 to 64 percent iron.

In the deposits occurring in volcanic rocks, the grade is not so consistently high. Erratic silica content and inclusions of country rock are the main causes. Shipments average from 50 to 60 percent iron. With the exception of the Modarelli deposit, the physical characteristics of the ore are very similar to the limestone replacement deposits. The Modarelli ore is almost entirely hematitic in composition and more earthy than the ore from other deposits.

The phosphorus, sulphur, and base-metal content in the ores from the presently active properties are all within the normal tolerances of the steel industry. However, in examination of these Cordilleran iron deposits, a close check must be made for these impurities. In these types of deposits, the phosphorus, sulphur, and base-metal content vary over wide limits and are often found in prohibitive quantities.

Haulage

Ore from all of these open-pit properties is transported to the railroad terminals by truck. Most of the operations utilize contract trucking from local trucking concerns. The haulage distances range from an 18-mile haul (six paved and 12 gravel) for the Minnesota pit, to a 39-mile travel distance (33 miles paved and six miles of gravel) for the Standard Slag operation at Gabbs. The Lovelock area properties haul their ore over a gravel road that is in excellent condition and exceptionally wide. The McCoy Iron mine has a 31-mile haul (21 miles paved and 10 gravel) and the Simplot operation trucks ore 29 miles (all gravel) to the railroad sidings. Six miles of road to Standard Slag's Stoke Iron mine is being improved under DMPA's access road program.

Two shovels are loading ore from the lower benches of the Stoke iron mine. Ore is hauled to the railroad in regular dump trucks and semi-trailer units.

Minnesota Pit

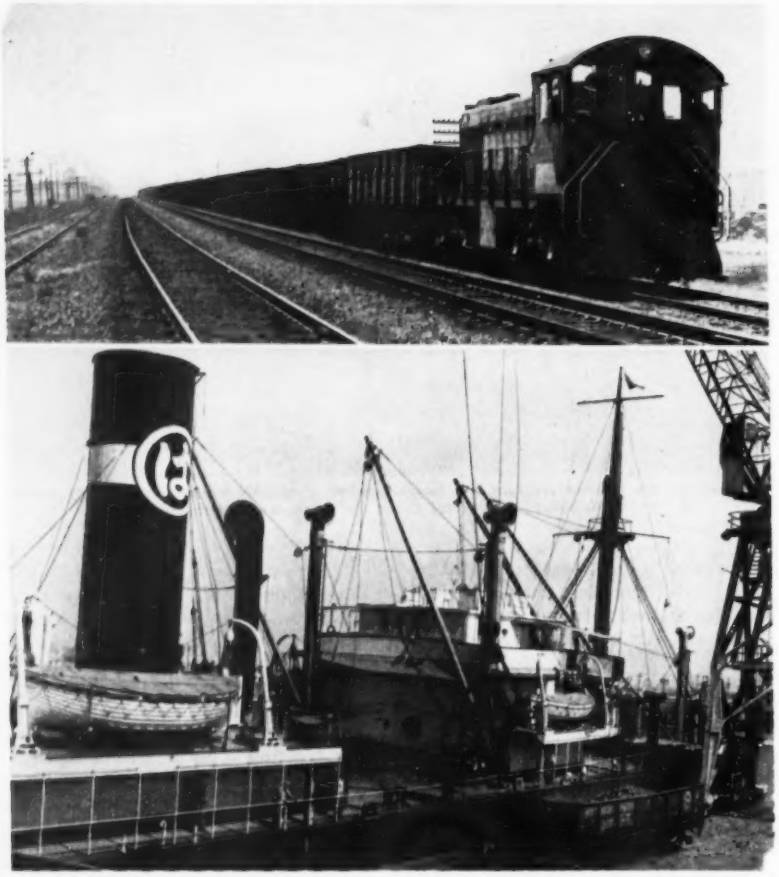
The Minnesota pit in Storey County is operated by the Standard Slag Company. The present production is about 300 tons per day and the firm plans to increase this to 600 to 700 tons per day in the near future. The first ore was shipped from this mine in late March 1952.

The mining has proceeded with the development of 18-foot working benches. An Ingersoll-Rand wagon drill with long steel, using standard 2½-inch, cross-type, steel bit, is used in the drilling of the benches. The unusual system for drilling the benches is shown in the diagram. The blasting is performed electrically, using delays. Secondary drilling is done with Ingersoll-Rand jackhammers. The total number of holes fired at one time may vary from 30 to 100. The loading of the broken ore is performed with a ½-cubic-yard Bay City shovel which provides adequate loading capacity for the present tonnage. The superintendent of the pit is George N. Tausan.

Stoke Iron Mine

This Nye County property is also operated by the Standard Slag Company. The Stoke Iron mine is the most fully developed in Nevada and during the past year has produced 250,000 tons of ore. It now maintains a production of nearly 25,000 short tons per month of iron ore, averag-

LEFT: Loading ore with a Byers ¾-cubic-yard shovel in the pit of the Nevada Iron company. RIGHT: Loading ore on one of the benches of the Minnesota pit.



TOP: Southern Pacific Company's iron ore express from the Nevada mines ends at Richmond, California. This Diesel electric switcher pulls a string of loaded cars toward the Parr-Richmond Terminal. BOTTOM: Travelling cranes with clam shell buckets unload 50 tons of Nevada iron ore from a Southern Pacific gondola in 10 minutes at the Parr Richmond Terminal, Richmond, California. The Japanese ore carrier will be unloaded at Yokohama, Japan.

ing 59 to 60 percent iron. The mining pattern (16-foot benches, etc.) is nearly identical with that of the Minnesota pit. Contracted stripping is exposing additional ore for future mining. Gardner-Denver and Ingersoll-Rand wagon drills are used for the drilling on the benches. Electric blasting has been used since the operation began. An average loading factor of 0.35 pound of explosive per ton of ore broken has been achieved during the past year's operation. The loading of the ore is done with two, ¾-cubic-yard, Model 25, Northwest shovels. The mine employs 25 men and is working two shifts per day at present. Frank Reinmiller is superintendent of Standard Slag operations; Vernon Wines is assistant manager; and Robert Jones is manager.

McCoy Iron Mine

The McCoy Iron mine in Lander County is under the management of New World Exploration, Research and Development Corporation. This property has been developed during the past few months and 5,000 long tons of high-grade iron ore (averaging 62 percent) have been shipped. The present planned production provides for 500 tons per day. The main ore body was outlined by a geophysical method (magnetometer survey). At present, the developed ore tonnage is 50,000 with several indicated, but as yet undeveloped, ore bodies for reserves. The development mining is being done using jackhammers with steel having 1¾-inch tungsten carbide bits. The present drilling pattern consists of six- to eight-foot vertical holes placed on five-foot centers (burden and spacing). The loading unit is a ¾-cubic-yard Unit Diesel shovel. Project director at McCoy is F. T. Quiett.

Dodge Construction Pit

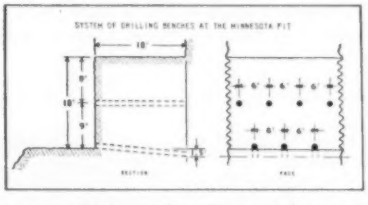
The Dodge Construction Company of Fallon, Nevada has developed the Heizer-Segerstrom Mine in Churchill County to the point where production will soon be maintained at 1,000 tons per day. The stripping and development work has been completed recently; as yet there is no regular system of working benches. Drilling is done with four Ingersoll-Rand wagon drills using steel with 2½-inch tungsten carbide bits. The compressed air for the pit is provided by two Ingersoll-Rand Gyraflow 600 cubic-feet-per-minute compressors. The loading is done with three Northwest shovels (two 1½ cubic yard and one ¾ cubic yard). Twenty-seven men are employed at this mine. Diamond drilling has proven 300,000 tons which will provide somewhat more than one year's supply of ore. Frank Dunn is superintendent of the mine.

Mineral Materials Company

The Buena Vista pit in Churchill County is operated by the Mineral Materials Company. The stripping program for this mine is nearly completed and 15-foot mining benches are being developed. The mining plans call for a production of 1,200 tons per day with possible increases in the future. The drilling equipment consists of six wagon drills (Joy, Ingersoll-Rand, and Gardner Denver). Vertical down-holes (six-foot burden and six-foot centers) are drilled using 2½-inch steel bits. Blasting is being done electrically. Initial work on the property began in October 1951, and the mine is now operating two shifts on waste and one on ore. Superintendent of the pit is Frank Masterson.

The American Ore Corporation

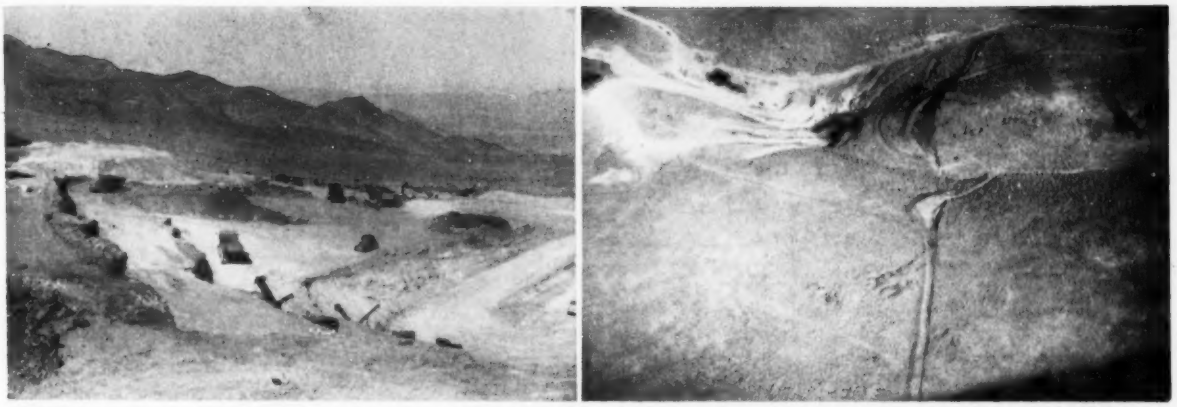
The American Ore Corporation is operating a small open pit adjacent to the Dodge Construction Company operation. The present production of approximately 120 tons per day is being mined from an outcrop about 35 feet high. Future plans give output tonnage estimates of 1,000 tons per day. Drilling is being performed with Sullivan and Ingersoll-Rand



wagon drills; 2¾-inch steel bits are used for the present mining system. A 1½-cubic-yard Northwest shovel is used as the loading unit. Eighteen men are employed at this property. Robert L. Miller, chief engineer for American Ore, is managing the property.

Nevada Iron Ore Company

The Nevada Iron Ore Company is the fourth operating company in the



LEFT: An overall view of the Stoke iron mine from one of the upper benches. Loaded trucks are weighed as they leave the pit. RIGHT: An aerial view of the open pit mine at the Modarilli iron deposit, Eureka County, Nevada (J. R. Simplot operator). A series of benches has been established in the pit shown in the dark area in the top center of the picture.

Lovelock area of Pershing County. This pit has been producing about 120 tons per day. An Ingersoll-Rand compressor and wagon drill are used for the drilling. The loading units are a Byers ¾-cubic-yard shovel and a ¼-cubic-yard Bear Cat.

The Modarelli Deposit

This open-pit mine in Eureka County is being operated by the J. R. Simplot Company of Boise, Idaho. To date, this pit has produced over 100,000 tons of iron ore. The pit has been opened in a side hill and they are mining a series of long benches. The loading is done with three shovels (Bucyrus Erie and Northwest). With the completion of development work, the production this year should be increased and plans call for an output of 300,000 tons. Diamond drilling is reported to have indicated 20,000,000 tons reserve of medium-grade ore. John Kobe is mine superintendent.

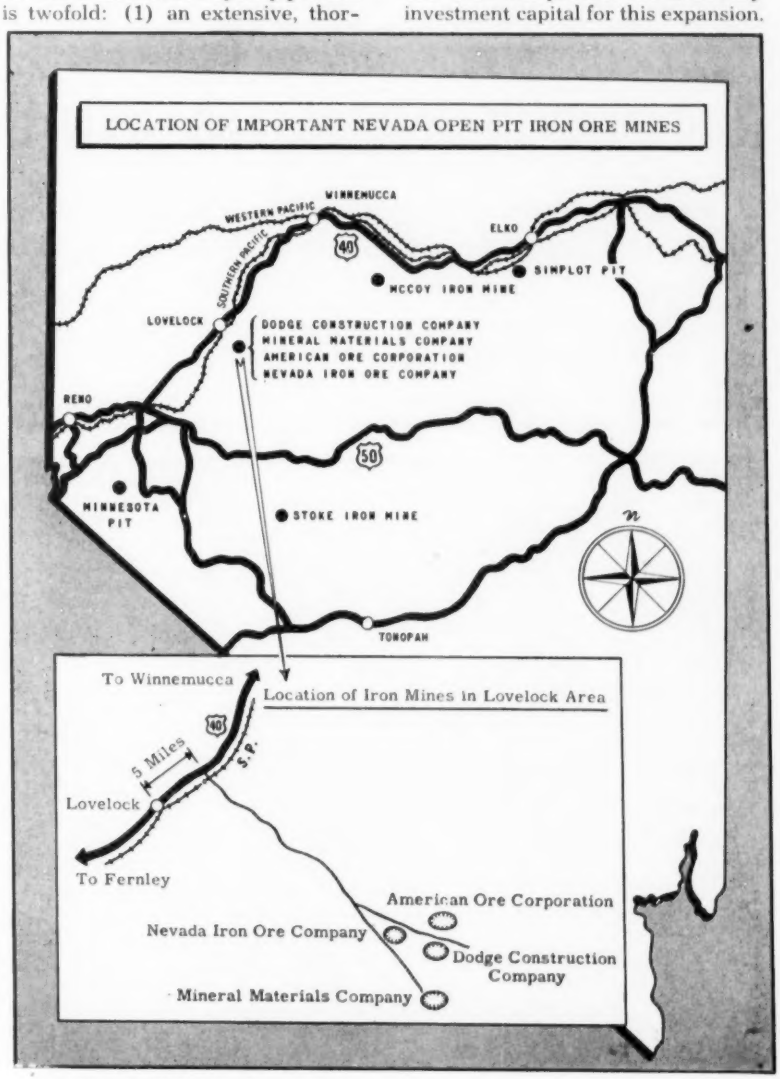
Beneficiation

The Dodge, Mineral Materials, and Simplot operations crush the ore to minus-8-inch at the mine before transporting it to the railroad cars. The ore is then transported from the crushers via short, inclined conveyor belts and stacked temporarily before loading into the trucks. Dodge and Mineral Materials use loading bins to load the crushed ore. Simplot employs one shovel to reload the stockpiled ore into the trucks.

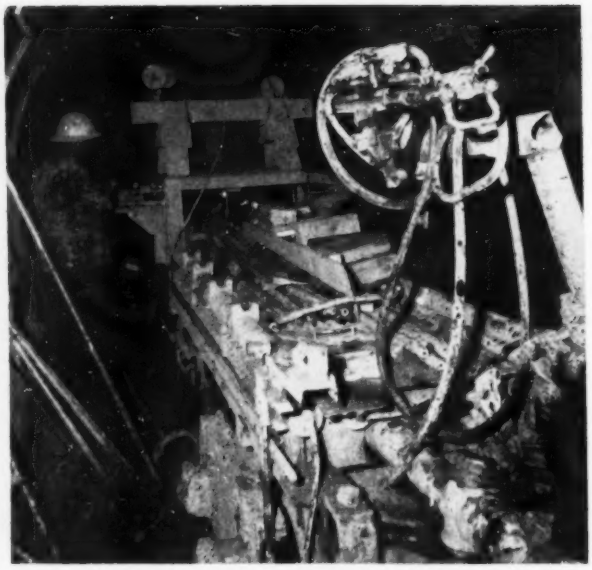
Conclusion

The majority of these open-pit operations have been developed with a minimum of capital investment because of the uncertainty of the Japanese ore market. The margin of profit, if any, during this development period is naturally quite low. Therefore, in such a short-term market, the greatest profit will be shown by the most efficient operating companies.

The solution for a longer operating life for these Nevada open-pit mines is twofold: (1) an extensive, thorough and well-organized exploration program extending known deposits and seeking new ones; and (2) the obvious additional markets for these ores that will provide the necessary investment capital for this expansion.



THE TUNNEL—Portal of Tunnel No. 4, North Poudre Supply Canal, the four-machine jumbo, and some of the 90-cubic-foot-capacity, C. S. Card, Granby, side dump cars used in setting the record.



THE JUMBO—Four machines were mounted on the jumbo and one reserve machine carried on the rear end. Electric lights on the jumbo furnished illumination for the face.

RECORD TUNNELING THROUGH ROCK

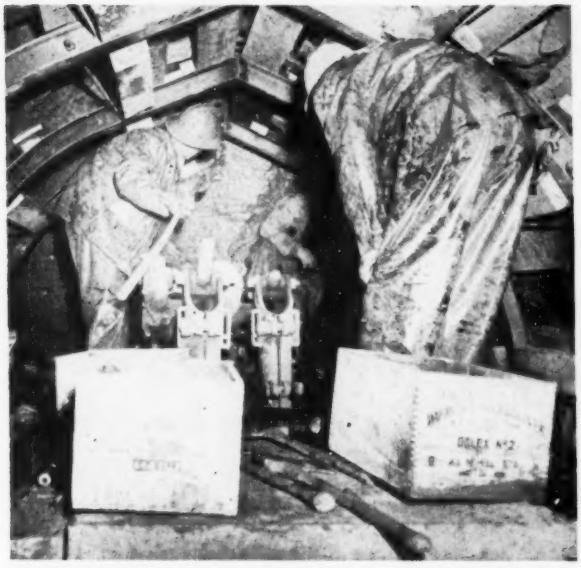
Record breaking rate of 1,332 inches in 1,440 minutes set in Tunnel No. 4 North Poudre Canal by crews of the G. L. Tarlton Contracting Company

A world's record for tunnel driving through rock from one heading was set on April 10, 1952 when 111 feet of 9 foot 4 inch, rough horseshoe (semi-eliptical) shaped tunnel was driven in 24 hours. Tunnel crews of the G. L. Tarlton Contracting Company under superintendent L. A. Stiles set the record in Tunnel No. 4, Schedule No. 5, U.S. Bureau of Reclamation's North Poudre Supply Canal, northwest of Laporte, Larimer County, Colorado.

DRILLING THE ROUND—Four automatic feed drifters were used to drill 36 holes to a round. One steel, 10-feet long, tipped with a Timken carbide bit, was used to drill the entire length of hole.

The 3,500-foot-long tunnel was about ⅔rds finished when the record was made. A large portion of the tunnel, as shown in the photographs, was driven through unstable formation requiring arched steel sets. However, the record section was driven through the Lykins sandstone which did not require any support.

Thirteen 10-foot rounds were drilled, loaded, blasted, and mucked out during the record day. The rounds broke an average depth of 8.54 feet. The 111-minute cycle, per round, averaged 28 minutes for drilling, 25 minutes for loading drill holes and blasting, 15 minutes waiting for the smoke and powder fumes to clear, 3 minutes barring down and moving the mucking machine to the muck pile, and 40 min-



BLASTING THE ROUND—The holes were loaded with DuPont Gelex No. 2, 45 percent, powder from the jumbo. The round was detonated with DuPont delay electric blasting caps.

BARRING DOWN—While one miner bars down loose slabs in the breast, another hooks up the electric light system. The ventilation pipe was carried within a few feet of the face.

utes for loading the broken rock into 14 90-cubic-foot-capacity cars.

Ten men were used underground on each shift. Art Stiles was night walker; C. O. Ross, Ray Hooper, and Larren Huffman, shift foremen; and Joe Pacheco, track foreman. All photographs were taken by Frank H. Spicer of Denver, Colorado.

→

THE MEN—Two of the key men who directed the record tunnel driving were LEFT, Whitey Ross, shift foreman; and RIGHT, Ted Fensky, engineer.

MUCKING THE ROUND—An Eimco Model 21 digs into the muck pile. Fourteen 90-cubic-foot Card cars were loaded per round.

BIG MUCK—Mucking operations were not slowed by large boulders in the muck pile.

The Bor copper smelter.

YUGOSLAV MINING EXPANDS WITH METALS GOING TO "FREE WORLD"

By P. J. Sergeant

London correspondent
Mining World.

A personal tour and survey of major Yugoslavian mining areas by this correspondent confirms all recent reports of the rapid expansion and growing exports of nonferrous metals from this country. Recognized as the most important mining country in Europe and probably one of the most mineralized areas in the world other than the Belgian Congo, Yugoslavia has moved ahead tremendously under the impetus provided by British and United States financial aid, equipment and technical assistance.—Ed.

This year (1952) should see a rapid expansion both in the production and in the export of Yugoslavian nonferrous metals. Yugoslavia is the most important mining country in Europe, outside of Russia, and its mines are using more and more British and United States equipment, capital, and technicians.

Exports of nonferrous metals have been going well this year up to the time of writing. In January and February, 478 tons of copper, 6,451 tons of lead, 573 tons of zinc, 123 tons of antimony and 60,246 tons of bauxite were exported. Customers were the United States (copper and lead), Western Germany (bauxite), Austria, and Great Britain.

Last year, total exports were copper 12,937 tons, lead 51,716 tons, zinc 4,936 tons, antimony 1,115 tons, and bauxite 448,504 tons.

In 1952, production of basic products has totaled: zinc 11,600 tons, blister copper 37,000 tons, electrolytic copper 14,400 tons, lead 65,320 tons, mercury 480 tons, aluminium ingots 2,800 tons, regulus antimony 1,450 tons, iron ore 263,747 tons, steel 472,800 tons, coal 8,309,000 tons, and bauxite 201,000 tons.

Nonferrous Metals Control

The nonferrous metals industry is run by the Nonferrous Metals Group (Grupa Metalurgije) of which Mr. Kostic is the chief. The group is within the orbit of the Council for the Electrical and Extractive Industries with headquarters in Belgrade. Exporting is handled by Yugometal in Belgrade, of which Dusan Stankanovic is the chief. Mr. Stankanovic studied in the United States and, before the war, was a metal salesman there.

Before describing individual mines and organization and methods of the industry, I will insert here a brief roundup of the various mining activities in Yugoslavia. The information is based on my own observations last year during a 3,000-mile automobile trip through the country, as well as Yugopress, Yugometal and other official Yugoslavian sources of information. The appalling roads in the country and the poor communications may be responsible for information which is out of date or inaccurate.

Antimony

The main deposits are in the Zajaca Basin near Loznica in Serbia.

They are the Krupanj properties. Yugoslavia is the first European country to treat antimony ores by the flotation process at the plant at Zajaca where there also is an antimony smelter. A large concentrating plant is being built there and additional ore reserves are being sought. The capacity of the present plant at Zajaca is said to be 1,500 metric tons of antimony a year.

The metal produced at the Lisa works is claimed to be amongst the purest in the world and it is obtained by a single stage of reduction. A typical analysis is 99.55 percent antimony, 0.10 percent arsenic, 0.10 percent sulphur, 0.05 percent lead, 0.05 percent iron, and 0.05 percent silica.

Copper

Production at Bor—the only copper producer—is back to the prewar level. The highest grade ores have been depleted and lower-grade ore is now being mined. The flotation plant is being enlarged and the electrolytic plant is being extended. By the end of this year, it is hoped the entire annual output of about 40,000 tons will be converted into electrolytic copper. Present capacity of the electrolytic plant is around 15,000 tons and assays 99.95 percent copper. A more detailed description of the Bor mine follows.

Aluminium

About 3,000 metric tons of alumina is produced by the Bayer process at the Lozovac (Dalmatia) plant. Around 8,000 tons of alumina a year are also produced at Moste, Slovenia. Dalmatia has very large bauxite deposits, hindered for the time being by shortage of transport. Yugoslav bauxite is of good grade and carries from 40 to 70 percent monohydrates containing about 1.0 to 2.0 percent silica. United States and British assistance has enabled the construction of the big new aluminium works at Strnisce, Slovenia, to be speeded up and completion is now expected in 18 months. The works have a planned capacity of some 55,000 tons of alumina and 30,000 tons of aluminium a year.

An order for prospecting and mining equipment intended for the bauxite mines of Yugoslavia has just been placed in Western Germany and delivery is likely before the end of the year. The Croatian bauxite deposits—the principal Yugoslav sources of this ore—extend along almost the entire length of the Dalmatian coast and are considered to be the richest in Europe, having an aluminium content of 50 to 60 percent. The mechanization of these mines forms part of a development program to increase the output of bauxite. Most of this will go to the new mill under construction at Strnisce, Slovenia, and will eventually enable Yugoslavia to increase exports of aluminium.

Quicksilver

There are, apparently, large reserves at Idrija on the Italo-Yugoslav frontier. Production stopped during the war but is steadily increasing and is now running at nearly 600 tons a year of ore assaying 1.0 to 4.0 percent mercury.

Chrome Ore

Yugoslavia is one of the world's biggest producers of the ore which is used largely for making ferrochrome at Ruse, near Maribor. The output of 2,900 tons super-refined quality is exported; other qualities are produced for home consumption. The ore is mined in the Radusa and Lojane Basins near Skopje, Macedonia. It is produced in three classes, viz. first class, minimum of 48 percent Cr_2O_3; second class, minimum of 44 percent; third class, concentrates from third class ore assaying 48 percent.

Lead

The Trepca mines are the biggest of their kind in Europe. This mine is described in detail later in this article.

A plant near Maribor, Slovenia, has a capacity of 10,000 tons of refined lead a year. The Mezica plant consists of a modern flotation mill treating 6.0 percent—3.0 percent zinc ore, smelter, and refinery which produces a soft, refined pig lead of a very high purity known as "Mezica" brand. The lead concentrate is smelted in the plant and the zinc concentrate is treated at the neighbouring Celje smelter. This zinc smelter has been restored since its complete collapse after World War II. Its production has risen sharply and is now running at around 12,500 tons a year. Refined zinc of at least 99.9 percent purity is marketed under the brand "C.C."

Manganese

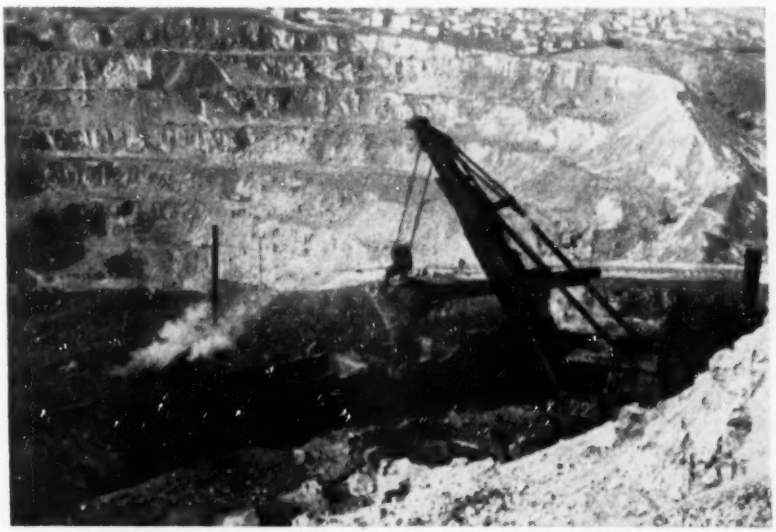
Small mines exist (Cer, Macedonia, is about the biggest) where silica-bearing ore is mined. Yugoslav iron ores contain from 4 to 8 percent manganese and processes are being tried to extract manganese.

Bor Copper Mine and Smelter

The Bor copper mine, Rudnici Bakara i Topionice Bor, in eastern Serbia, is one of the most impressive mining sights I have seen. The open-pit mine workings and plants extend for nearly two miles. Two-thirds of the production is from open-pit working and one-third from underground mining.

A new copper mine, as large as Bor, is about to be opened at Maidanpek, where all mining will be open pit. A new smelter will be built to handle the ore from both mines. This new plant will have, to begin with, a capacity of some 40,000 tons of copper a year and it will use the roaster gases to make sulphuric acid. The new works will be equipped with Flammofen (reverberatory furnaces).

Loading copper ore in the Bor open pit. A large copper mill is being built at Sevojno by Uzice to treat this ore.



An automatic drifter made in the United States is used in the Bor open-pit copper mine in Serbia.

It is hoped to almost double Yugoslavia's copper output to 70,000 tons by 1954 and increase it eventually to 100,000 tons a year by 1961.

During the last year, copper production has been increased at Bor by the introduction of a number of the United States' mechanical excavators and the increasing of the electrolytic plant's capacity to 36,000 metric tons a year. No further modernization will be carried out because the new plant is being erected near Maidanpek.

The Bor plant was almost destroyed by the Germans twice during the last war. It has been restored and now employs 8,000 workers. Engineer Ceh Drago is in charge. The Bor flotation plant has a capacity of some 4,500 tons per 24 hours.

The deep mine is some 400 meters deep. Adjoining it are the great craters from which an entire hill had been moved and which were known to prewar mining men as the Dulkan's Round Hill workings. The main workings are now on the terraces of the Tilvaroch and Tilvamika mountains.

Trepca mine and Zvecan smelter

Before World War II, this British-owned mine (Trepca Mines, Ltd.) was among the most prosperous in Europe. High-grade ore and low wages combined to make it successful. The highest production reached was 698,760 tons in 1940. In 1945, this had fallen to 121,459 tons—caused mostly by the war, partisan activity, and sabotage. In December 1946, it was nationalized by Yugoslavia. The name is now Rudnici i Topionice Olova i Cinka Trepca. Production began to climb steadily to 630,000 tons in 1949, 665,191 tons in 1950, and last year, I am told, the 700,000-ton mark was reached. The grade of the ore is lead, 7.31 percent; zinc, 4.77 percent; iron pyrite, 31.11 percent; and copper, 0.15 percent. Total production of ore from the Trepca mines from January 1930 through 1944 was 7,198,470 tons, averaging 8.8 percent lead, 6.0 percent zinc, and 106 grams of silver per ton.

Ore from Stari Trg mine—the main one, Kaoponik mine and the Ivalya group of mines, lying to the south, is concentrated at the Zvecan mill.

The director of the group is Milan Mickovic and the chief engineer, who kindly showed me round the plant, is Voyin Stojsav Gevic. The director was unfortunately away when I called but the chief engineer, who before the war was engineer at the Bor plant, and the rest of the staff left me with an impression of great enthusiasm and determination.

The entrance to the Stari Trg mine is about 760 meters above sea level. A new shaft is being sunk and three new levels (at 255, 315 and 375 meters) are in operation. Much of the ore is still mined by hand but I noticed a good deal of automatic equipment, including Ingersoll-Rand drills, and Joy scrapers.

The output—three shifts a day—is around 2,200 tons of ore a day. The ore is conveyed to the concentrator, 12 kilometres away, by an aerial tramway. There are total estimated reserves of 10,000,000 metric tons but the metal content of the ore is getting progressively lower as the deeper levels are mined. About 11,000 tons of ore a month are sent to the plant from the Kaoponik mine, assaying 8 to 10 percent lead and 6 to 8 percent zinc.

Some 500 tons of ore a day is supplied to the smelter from the Ivalya group of mines at Novo Brdo, which has its own concentrating plant, and Janjevo which sends its ore to Zvecan for treatment.

Loading bauxite into trucks at the Crne Lokve mine at Mostar, Bosnia.

Drilling lead ore with an auger at Mezice, Slovenia.

The Zvecan mill and smelter give a mixed impression. There is a tremendous amount of reconstruction going on at the works and the chief engineer told me they had a great deal of new machinery on order to improve and extend it still further. Parts of the plant are old and dilapidated. Two sections of the flotation plant are new, as is the sintering plant. The new water jacket furnace has been finished. Lead production may have reached 55,000 tons last year; it is marketed under the name "Trepca."

Among the new equipment which has arrived—some from ECA, some bought by the Trepca company—are automatic loaders, Sullivan scrapers, a variety of Ingersoll-Rand equipment, hoists and mine hoists, Eimco loaders, GEC locomotives, a Denver flotation mill, other flotation machines, and Gardner-Denver compressors.

Eventually, a production of 70,000 annual tons of lead is aimed at, but difficulty is being experienced in increasing the present labor force of 8,000 workers.

The flotation plant is equipped with four Symons crushers; six Hardinge ball mills; the Denver flotation unit with 240 cells; six Dorr classifiers, one Dorr thickener and one Oliver filter. There is also a new Dwight-Lloyd sintering machine. The smelter consists of 12 Newman-type, open-hearth furnaces.

The zinc concentrates are sent to the Celje zinc plant in Slovenia which has 1,200 retorts and a yearly output of around 10,000 tons of zinc.

The system of managing the mine was altered radically by last year's "decentralization laws." Before that, almost every decision had to be referred to Belgrade where officials had been appointed, very often more for their military and political qualities than for their mining knowledge.

Chief engineer Voyin Stojsav-Gcvic told me how the new political climate affected the Trepca group. "Before," he said "every silly little thing had to be authorized from Belgrade. Now, we are just given targets and allowed to do our own selling, even abroad if we wanted to, and buy the equipment we want within a certain figure of foreign currency."

Speaking in French, he went on to describe how the mine was run. The director is appointed by the government. He, the chief technicians, and workers representatives form a council which runs the mine. It meets about once a month and criticisms and suggestions are freely made. According to the law, if the council is dissatisfied with the director they can have him removed.

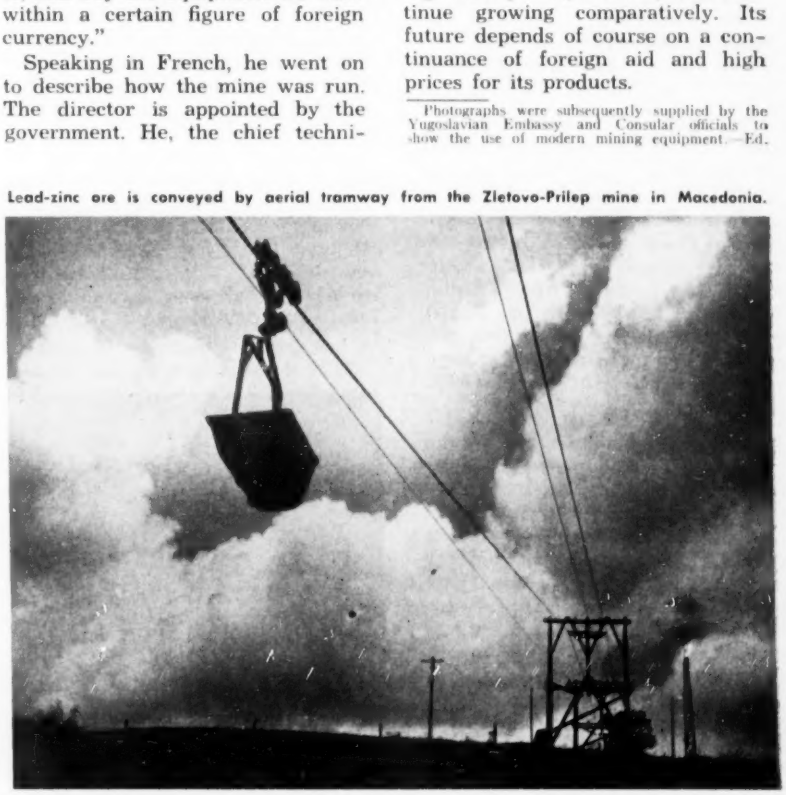
The workers seemed reasonably happy and were well housed by Balkan standards. Their wages are low but they work very hard, especially the Communist party activists. Many of them are sold on the idea that through greater production lies their country's salvation and are very patriotic. The supply of food and consumer goods is still meager but seems above the standard of the rest of the industrial parts of the country.

Mining Future Bright

Yugoslav mining, to sum up, is expanding rapidly with the aid of United States and British equipment. Its costs are low—on the whole—but it needs much reequipping. The workers' standard of living is improving and their enthusiasm does not seem to be waning. Desperately short of technicians, the industry is not doing as well as it might but there is a big technical training scheme in progress now. The industry forms a big and important part of the world's mining activity and, I think, will continue growing comparatively. Its future depends of course on a continuance of foreign aid and high prices for its products.

Photographs were subsequently supplied by the Yugoslavian Embassy and Consular officials to show the use of modern mining equipment.—Ed.

Lead-zinc ore is conveyed by aerial tramway from the Zletovo-Prilep mine in Macedonia.



An aerial view of the operations of the Rhokana Corporation, Ltd. at Kitwe, Northern Rhodesia. The copper smelter and electrolytic refinery buildings are in the center, while the mine shafts and flotation mill are in the right background. Houses in the African townsite of Wusikili are in the left foreground.

Nkana B Shaft is one of the three main hoisting shafts. Ore from the headframe bin is loaded into railroad cars and hauled to the nearby flotation mill. The shaft was sunk in 1929 and 1930.

DIAMOND DRILLING AT RHOKANA

Research, Development, and Mine Testing of Machines, Bits, Drilling Speeds, and Hole Sizes Indicates More Broken Ore at Less Cost From Larger Holes

By O. B. Bennett
General manager, Rhokana Corporation, Ltd.
Nkana, Northern Rhodesia

Mr. Bennett presented his paper "Diamond Drilling Practice at Rhokana" at the Diamond Drilling Symposium held in Johannesburg, Union of South Africa, from April 21 to 23 under the auspices of the Chemical, Metallurgical and Mining Society of South Africa. Pertinent information from the paper has been abstracted through the cooperation of the Society. —Ed.

Diamond drilling at the Nkana copper mine in Northern Rhodesia was first applied to pillar recovery in old upper level workings, for both ore extraction and hanging wall caving to avoid a general collapse and the resultant dangerous air blast. Diamond drilling has also been successfully applied in recovering large tonnages of ore in old and abandoned workings.

Blast hole diamond drilling was first used to complete shrinkage stopes under hanging wall pressure conditions. Diamond drill stoping on a large scale logically followed. Elimination of some sublevel development became obvious, and sublevel intervals were increased from 25 to 50 feet. After trial of alternating hanging- and foot-wall sublevels, it was decided to revert to drilling from hanging-wall drifts only. Further experiments in drilling parallel BX holes from crosscuts to the foot-wall followed, with holes simultaneously blasted, using instantaneous fuse. At present, rings are drilled 12 to 13 feet apart. The fourth hole in the ring is 1½ feet from the hanging wall and gives a clean break.

O. B. Bennett

Diamond Drilling Improvements

Attention and effort are now being devoted to improving equipment, drilling and blasting techniques and mining methods generally.

A number of machines have been tested and adaptations made by the mine staff. At present, modified CP machines are successfully drilling BX and NX blast holes, but wear and tear and maintenance costs are considerably higher than in normal EX drilling. These machines are considered too light and underpowered for large holes. Other machines under test include the Holman, and Boyles Brothers JEG-type swivel head with a JV5 reciprocating motor. Advantages of the former are the hydraulic feed, small high-pressure pump with self-contained oil reservoir, 16 hp. at 80 pounds air pressure, simple operation, and rapid advance or retreat.

With a CP55 vane motor, the Boyles machine drilled 58 feet at an average speed of 2.03 inches per minute. With a JV5A piston motor,

57 feet were drilled at an average speed of 3.22 inches per minute. Air pressure was 62 pounds per square inch in both instances. The heavier Boyles machine is particularly adapted to NX holes and will likely reduce maintenance costs.

Table No. I
Rhokana Corporation's Costs, Powder Consumption, and Ore Broken By EX, BX, and NX Diamond Drill Holes

Bit Size	*Cost in Cents Per Foot Drilled*	*Pounds Powder Per Foot of Hole*	*Tons Ore Broken Per Foot of Hole*	*Average Feet Drilled Per Machine Shift*
EX	5.4¢	0.71	1.61	62
BX	13.1¢	1.92	6.48	41
NX	——	2.94	15.69	29

Diamond Drill Bits

Jointly with Boart Products Ltd., Rhokana Corporation is conducting experiments of profile design, diamond size and grade, peripheral speeds, and matrix materials.

Four types of bits have been in general use since 1939, with a preference for non-coring bits. The general tendency has been towards a more rounded outer section, and in one fourth of the types, a more acute angle in the center recess.

To increase drilling speeds and reduce bit costs further, semi-coring bits are being tested to gain the following advantages: less rock cut and a faster drilling speed, less carats set with the consequent lower losses, elimination of the vulnerable non-coring bit center, and reduced vibration. These bit-types initially gave trouble through core crushing and grinding, and insufficient water clearance. Sintered carbide inserts, set with small stones, have overcome the latter difficulty. Core crushing remains a problem due to the hard Rhokana ore.

BX Coring Bits For Hard Ground

BX bit life, under African operators, is only about 25 feet. These bits are therefore used for ground that is too hard for the normal non-coring bit. Their advantage is in high speed of drilling. Experiments will be conducted with an extremely tough, hard, metal matrix in a coring bit set on the head of rods flush-jointed on the inside.

NX Holes For Large Stopes

Successful BX blast holes in stoping directed attention to a still larger hole, especially for caving, and in stopes in the large fold areas. NX non-coring bits with a standard profile and standard BX bits used as a pilot, followed by NX reaming rings, have been used. The latter has greater penetration speeds and crown life.

Table No. 1 gives comparable figures for different bit sizes.

Diamond Sizes And Grades

Originally, diamonds of a size of 10 to the carat were used, and tests were made on those from 10 to 35 per carat. Today, the determining factor of size is availability, with C. 2 grade, eight to 10 per carat, the present standard. Center-set stones are now carefully chosen for shape and absence of cleavage planes.

Rhokana practice for lowest costs has been to match ground hardness with diamond quality. C. 1 grade, for example, gives cheaper results in hard ground. Now, however, only C. 2 stones which suit average conditions are used. In EX bits, from 130 to 160 stones weighing 16 carats are used; in BX, from 220 to 270 weighing 27 carats; and in NX (BX reamer), 380 to 470 stones weighing 47 carats are set. Small stones (20 per carat) have been tested with very encouraging results, due mainly to decreased diamond losses, which were in proportion to the weight set—namely, about seven carats for the small stones, against 16 carats for normal EX bits.

Table No. II
Comparison of Blasting Results For EX and BX Blast Holes at Rhokana Corporation

Item	*EX Hole*	*BX Hole*
Tons per foot of hole drilled	1.61	6.48
Stope Blasting: tons per pound of powder	2.58	3.50
Grizzly Blasting: tons per pound of powder	2.84	5.48

Peripheral Speeds

Equipment with higher speeds has yielded promising results, but suitable equipment and machines are not yet available. A Nkana test with a standard EX non-coring bit gave a life of 435 feet at plus 2,500 revolutions per minute, against 111 feet at speeds from 1,600 to 1,800. Penetration speeds were also 60 percent faster. First moves in these directions must come from machine and equipment designers.

Matrices

At present, tin bronze is used exclusively as matrix in bits supplied the Rhokana Corporation. Improved matrix material has made possible elimination of collaring bits thought necessary at one time for smoothing the drilling face before the normal bit was used.

Diamond bits are examined daily by the Roto Drill Department and replaced when necessary. As a result, bits are withdrawn from service before their salvage value is lost.

Speeding Rod Coupling

To eliminate time lost in coupling and uncoupling, drill rods with male and female tapered Acme threads are to be tried; these require only 1½ full turns.

Costs From 1944 to 1951

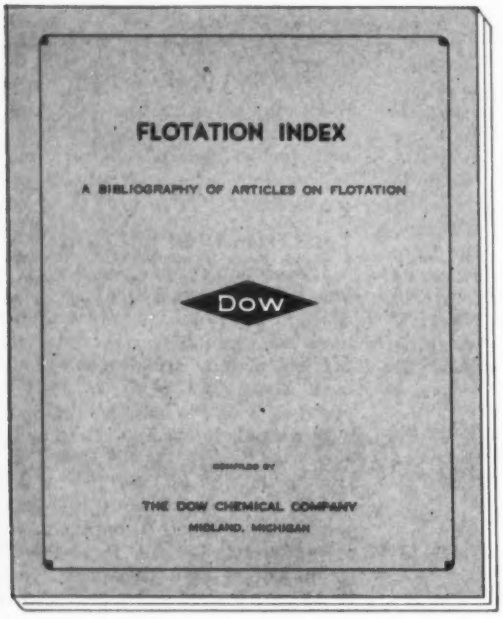
The sectional and overall costs of blast hole diamond drilling in respect to BX holes from 1944 to 1951 have been as follows: the total cost per foot of hole drilled was reduced from about 25.4 cents in 1944 to about 15.8 at the end of 1948, and with a small intervening increase to about 16.0 by the end of 1951. From 1944 to the end of 1948, the bit cost was lowered from about 13.2 cents per foot to about 5.9, and with intervening fluctuations to about 5.3 by the end of 1951. Labor costs from 1944 to the end of 1948 were reduced from about 8.1 cents to about 5.6, and thereafter slowly increased to about 6.3 by the end of 1951. Equipment and maintenance costs have moved narrowly, both above and below 4.2 cents and were about 4.0 in 1944, at a peak of about 4.9 in 1948, and about 4.1 in 1951.

BX total drilling costs were brought down from about 55 cents per foot drilled at the beginning of 1950 to a minimum of about 29.8 in May 1951, but thereafter increased to about 35.0 by the end of 1951. From May to August 1950, bit costs declined from about 30.8 cents to about 13.2, and after a relatively stable period finished 1951 at about 12.9. Labor costs were gradually reduced from about 13.2 cents to 11.2 between May 1950 and December 1951. Equipment and maintenance costs declined from about 10.9 cents to about 6.5 between May 1950 and May 1951, and thereafter increased in balance to about 10.9 by the end of 1951.

Blasting Improvements

In 1950, millisecond delays attracted attention coincident with experimental BX holes. With these two developments combined, some startlingly good results were obtained. They are summarized in Table No. II.

ANNOUNCING



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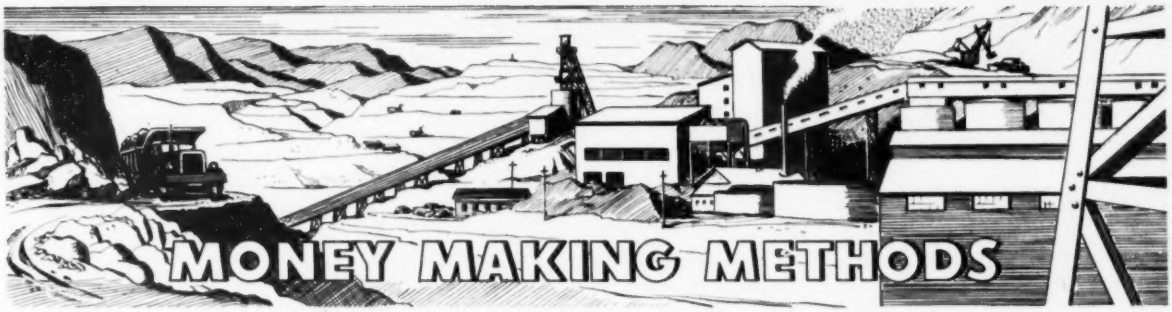


TORBRIT SILVER LONG-HOLES

According to G. B. Tribble, manager, Torbrit Silver Mines Limited at Alice Arm, British Columbia the use of sectional steel and tungsten carbide bits is now common practice. He reports, "An interesting development during the year [1951] was the use of sectional steel and tungsten carbide drill bits in stopes and pillars. By using long holes from a central drilling location, large blocks of ore are drilled off and the whole block blasted in one operation. The total footage of drilling done during the year in this connection was 40,653 feet."

MINING'S 1ST MICROWAVE UNIT

The Freeport Sulphur Company will build the first microwave radio communication network ever to be used by a mining company. The network has been approved and licensed by the Federal Communications Commission. The system will link the New Orleans office with the company's Louisiana sulphur mines and will be an important aid in developing two new deposits. The new microwave system will be tied in with the existing ship-to-shore telephone system so that any of the company's tugs and barges on the Mississippi River or along the Gulf Coast can be contacted from any of the mines or the New Orleans office.

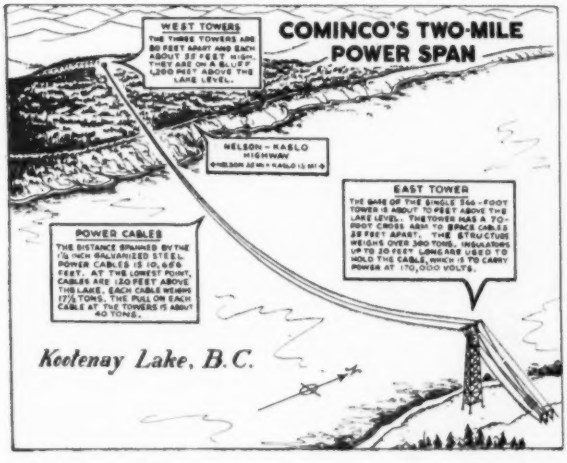
WIRE BRAID AIR HOSE

Clark L. Wilson, superintendent of the New Park Mining Company at Keetley, Utah has reported on the use of jeck-legs for drilling and wire braid air hoses in the company's mine.

Jack leg machines are used in drilling shaft stations or other work places in which it is difficult to arrange machine set-ups. Jumbo mounted leyner machines are equipped with five-foot aluminum shells to reduce steel changes needed and to save drilling time. Wire braid air hose has been used on mucking machines for seven months. The original hoses are in service without a hose repair needed during this period. Flexibility is not impaired by the wire and a slightly higher first cost is off-set by durability to abuse and longer wear.

World's Longest Power-Line Span

RIGHT: A general view, looking west, through the 366-foot high east tower at the site of The Consolidated Mining and Smelting Company's two-mile span of power cables crossing Kootenay Lake near Riondel, British Columbia. The west terminal, three towers averaging 55 feet in height, is situated on the bluff on the opposite shore and is indicated by the arrow. Each of the three galvanized steel power cables is 1 1/4 inches in diameter, weighs 17.6 tons, and is 10,733 feet long. BELOW: A diagrammatic sketch of the Kootenay Lake cable crossing. The span was energized on April 8, 1952 to bring additional power to mine and concentrator at Kimberley.



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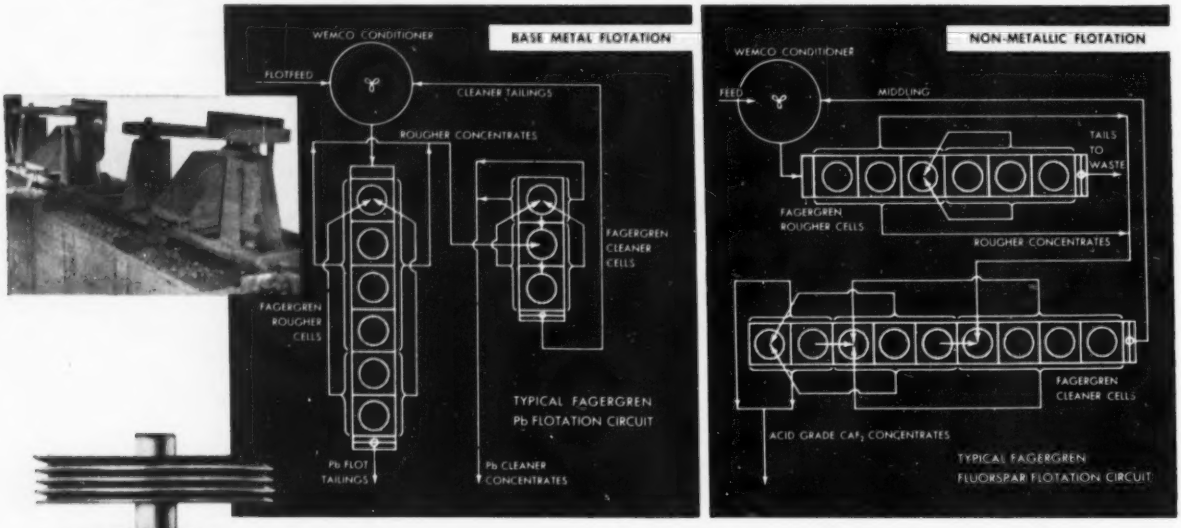

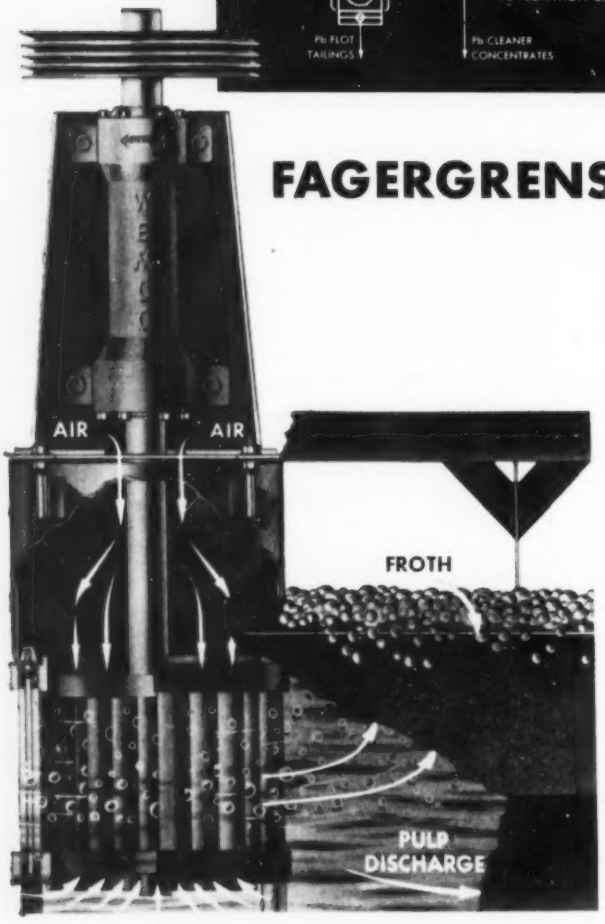

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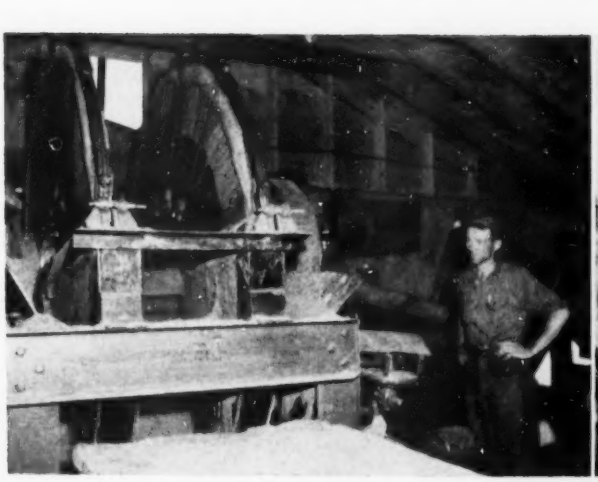
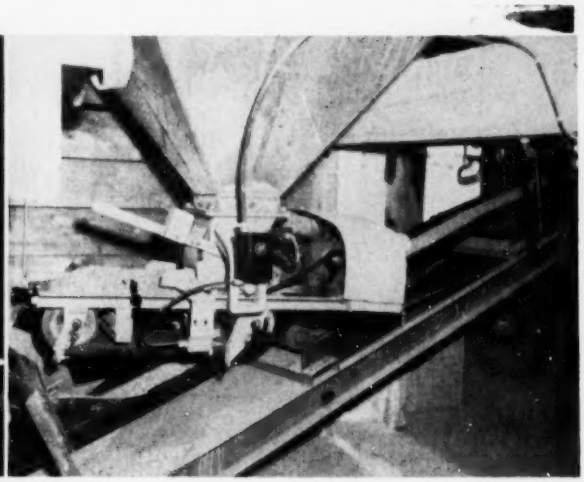




LEFT: After some dewatering in a 30-inch Akins classifier, final filtering is done by this two-disk American filter. Because of the rapid settling rate of the ferrosilicon, the center portion of the disks cannot pick up a solid cake, and vacuum would be lost if this area was not blinded with a coat of asphalt roofing cement. Mil Rachunek is shown. Right: This Hardinge Constant Weight feeder delivers ore to the ball mill feed belt.

RHUDE WET GRINDS FERROSILICON FOR THE IRON RANGE HMS PLANTS

A service industry that is primarily a metallurgical plant is, to say the least, unusual in the mining field. Perhaps, therefore, the Rhude Media Company of Marble, Minnesota, is unique. The company wet grinds ferrosilicon and delivers it as filter cake to the ever increasing number of Heavy-Media Separation plants on the Iron Ranges. By providing a dependable, close-at-hand media source at a cost somewhat below that of dry ground ferrosilicon, it serves a district need.

J. O. Rhude, iron mine operator, is the plant's owner. Patrick Sheehy is general manager, and Fritz Larson is superintendent.

The grinding plant is a small, compact unit of two tons per hour capacity. It was built during the winter of 1949-50 and commercial operation was started on a one shift per day basis in April, 1951 It is equipped to produce three sizes (minus-100-mesh, minus-65-mesh and minus-48-mesh), but virtually all production is of the minus-48-mesh material which is most widely used in the district.

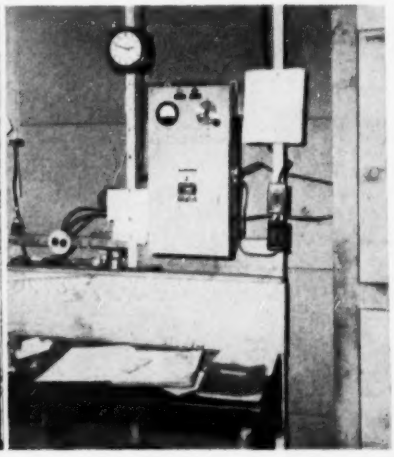
Briefly, ferrosilicon ingots, or pigs, are broken in a jaw crusher and further reduced to minus-¼-inch in a cone crusher in closed circuit with a screen. Grinding is in a standard ball mill, but classification requires a combination of a hydro-sizer and a spiral classifier. After screening to scalp off large particles, the final product is filtered on a leaf-type filter.

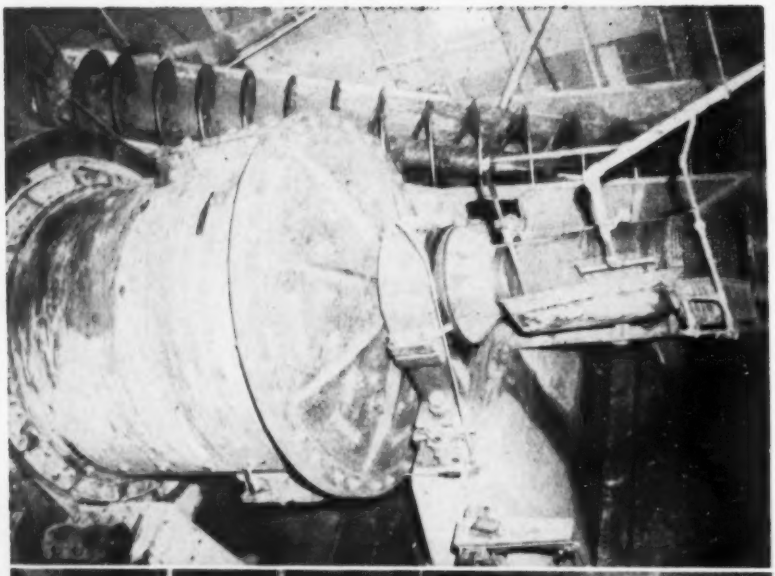
Grinding Problems

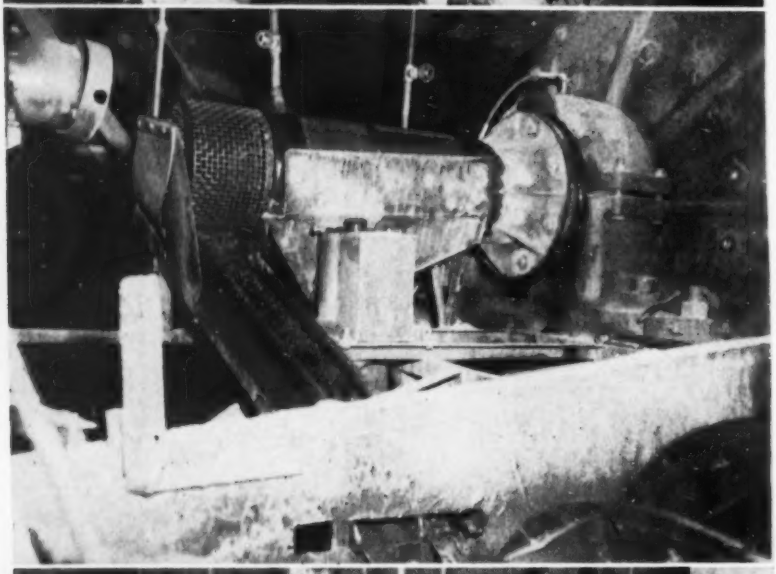
In handling a high specific gravity product in a suspension without slime, two problems in a grinding classification circuit are evident. First, classification is extremely difficult, and there is a marked tendency to overgrind the material. Second, solids settle so rapidly in the filter, that only the outside edges of the disk are able to pick up a solid cake and vacuum is lost at the center. While it was thought that the filter cake might set up rapidly in the bin and create a storage problem, this has not been the case. After the addition of lime, the material showed no tendency to solidify unduly even after four months.

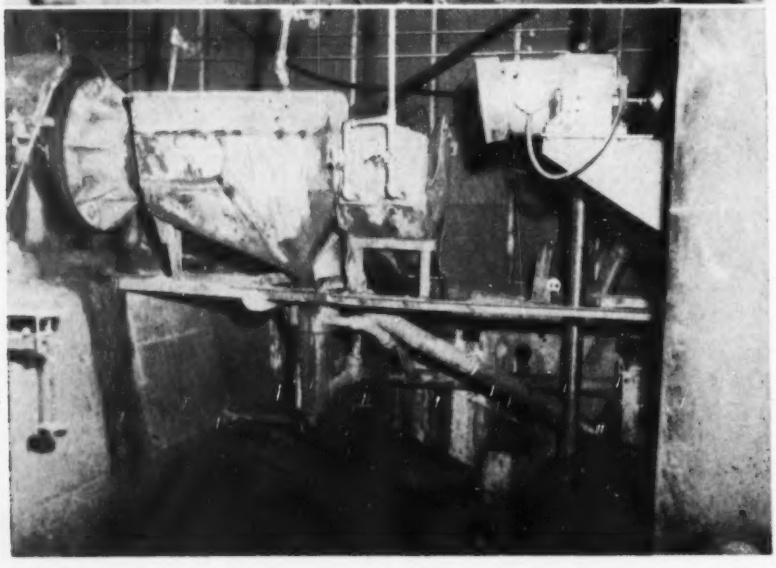
Raw material, purchased from

LEFT: Patrick Sheehy, general manager, in the combination office-weigh house. RIGHT: When a constant rate of feed was maintained to the ball mill, there was a tendency to overgrind the ferrosilicon. By keeping the mill rather full, but not overfilled, this problem was eliminated. A microphone is located near the center of the ball mill. When the contents of the mill decreases, it becomes noisy, the sound causes the mechanism of the Electric Ear to start the ball mill feed belt.









TOP: Looking down on the 4 by 6-foot Colorado Iron Works ball mill and 36-inch Akins high weir classifier, which make up the ferrosilicon grinding circuit. The mill has a grate discharge with ⅜-inch slots. CENTER: The ball mill discharges through a trommel screen with the large particles laundering directly to the classifier. The square box (just below the screen) is the top of a hydro-sizer or hydraulic classifier which is an important unit in handling the hard-to-classify ferrosilicon. BOTTOM: Ball mill discharge and lower portion of the hydro-sizer as viewed from the opposite side of the center picture. Fine particles discharge through the sloping pipe to the sand pump at lower right. Water is introduced tangentially near the bottom and center of the sizer. Coarse material flows to the classifier pool through the pipe almost hidden from view by the sizer.

the Keokuk Electro Metals Company, is ferrosilicon in the form of ingots approximately 1½ by 4 by 12 inches in size with an analysis of 85 percent iron and 15 percent silica. Received in bottom dump ore cars which discharge to a railroad receiving bin, the pigs are moved some 100 feet to a bin at the mill by a Lull-Shoveloader mounted on a Minneapolis Moline rubber tired tractor. They are hand fed to a slow moving 12-inch conveyor belt with flat idlers for movement through the crushing circuit.

The flowsheet of the plant is almost the same as the crushing and grinding circuit of any small metal mill, except for a stage of hydraulic classification between the ball mill and classifier.

Crushing presents no particular problem. Primary crushing is in an 11 by 15 inch Allis-Chalmers jaw crusher set at one inch. The machine has manganese steel jaws and wear is relatively light. A water spray over the crusher wets the material slightly and makes it easier to control on the conveyor belt.

Secondary crushing is accomplished in an Allis-Chalmers Model 1-22 type R crusher operating in close circuit with a 1 by 4-foot Allis-Chalmers screen with a ¼-inch screen cloth. The material tends to break in a slabby manner which precludes the use of a slotted screen, and a circulating load of about 30 percent is built up in obtaining a uniform ball mill feed. Screen undersize drops to a steel, hopper-shaped storage bin of 10 ton capacity.

Grinding is in a 6 by 6 foot Colorado Iron Works Company's ball mill with grate discharge. The grate has ⅜-inch openings. The ball mill is lined with manganese steel liners and charged with forged manganese steel balls. Ball and liner wear is very slight. The size of the grinding balls seem to have a marked effect

on the screen analysis of the discharge. The larger the ball, the coarser the product. Currently, three inch make-up balls are added for producing a minus-48-mesh product.

Overgrinding Solution

One of the major troubles in early stages of operation was overgrinding. At that time a Hardinge Constant Weight Feeder was delivering a uniform two tons per hour to the scoop box of the ball mill. Experimentation proved that a more uniform grind was obtained by controlling the level of pulp in the ball mill rather than by controlling the rate of feed. Currently a Hardinge Electric Ear provides this control automatically.

A microphone is located at about the center point of the ball mill. As the pulp level drops, the mill becomes noisy, the sound is transmitted over the microphone to the electronic equipment of the Electric Ear which actuates the ore feeder and conveyor belt. When the ball mill is filled, it becomes quiet and the Electric Ear shuts off the feed supply.

Optimum Screen Analysis, in Percent, for Three Sizes of Ferrosilicon Media

Mesh Size	*48-Mesh*	*65-Mesh*	*100-Mesh*
+ 48	3.0	..	..
+ 65	12.5	3.0	..
+100	22.9	13.6	3.0
+150	15.8	15.5	9.8
+200	8.8	10.8	11.6
+325	11.6	17.3	22.6
−325	25.4	39.8	53.4

It is necessary to carry a light load of feed in the ball mill because an overload will raise the specific gravity of the pulp to a point where the grinding balls float. This creates a mass that causes overgrinding and clogging of the ball mill.

Lime, at the rate of 10 pounds per ton of feed, is added by hand to the classifier in the grinding circuit. This is not a reagent, but is to prevent oxidation of the ground ferrosilicon and to reduce its tendency to set in the storage bin.

Difficult Classification

The problem of classification was difficult because of the high settling rate, the lack of supporting slime, and the probability of induced magnetism causing flocculation. All of these were overcome in a satisfactory manner by the use of a 36-inch Akins spiral classifier in combination with a stage of hydraulic classification, or a hydro-sizer as it is generally called at this plant.

The ball mill discharges to a trommel screen with large particles laundering to the pool of the spiral classifier. The fine material is funneled to the hydro-sizer. Both units produce a final product.

The hydro-sizer is essentially a 20-inch length of six-inch pipe and a 14-inch length of four-inch pipe joined at the end and standing vertically with the larger pipe above. A square metal box has been built around the upper pipe to catch its overflow and act as a small sump. The ball mill discharge enters the hydro-sizer at a point just above the junction of the two pipes. Water is introduced tangentially through a one-inch opening at the extreme bottom of the hydro-sizer and in lesser quantities at a point just below the feed entrance port. Most of the water discharges with the coarser particles through an opening located at about the center of the lower (smaller) section of the hydro-sizer. It returns to the pool of the Akins classifier. The remaining water passes upward through the sorting column and overflows, at 20 to 30 percent solids, to a 2½-inch Denver vertical sand pump where it joins the overflow of the Akins. The sand product of the Akins classifier returns to the scoop box of the ball mill.

Final Sizing by Screen

Removal of any coarse material not eliminated by classification is accomplished on a 3 by 4-foot Allis-Chalmers screen with 48-mesh cloth. The product of the classifier and hydro-sizer is elevated to this screen by the Denver sand pump. In theory, to produce a finer than 48-mesh product adjustment would be made in the classification circuit and the cloth on this screen would be changed to a 65- or 100-mesh. In actual practice, except where a long run of a finer product was being made, adjustment is made in the classification circuit; but the control of maximum particle size is handled by steepening the angle of this screen. The screen is changed on long runs.

Typical Screen Analysis, in Percent, of 48-and 65-Mesh Media Produced by the Rhude Media Company

Mesh Size	*48-Mesh*	*65-Mesh*
+ 48	5.20	....
+ 65	15.40	8 - 10
+100	17.30	....
+150	12.10	....
+200	9.55	....
+325	10.40	....
−325	29.0 +	36 - 37

Oversize from the screen launders to the classifier pool while the undersize is partially dewatered in a 30-inch Akins classifier. The screw product of this classifier is filtered by a two-disk, six-foot American filter. The classifier overflow passes to a 14-foot Denver thickener and the thickened product is returned to this filter.

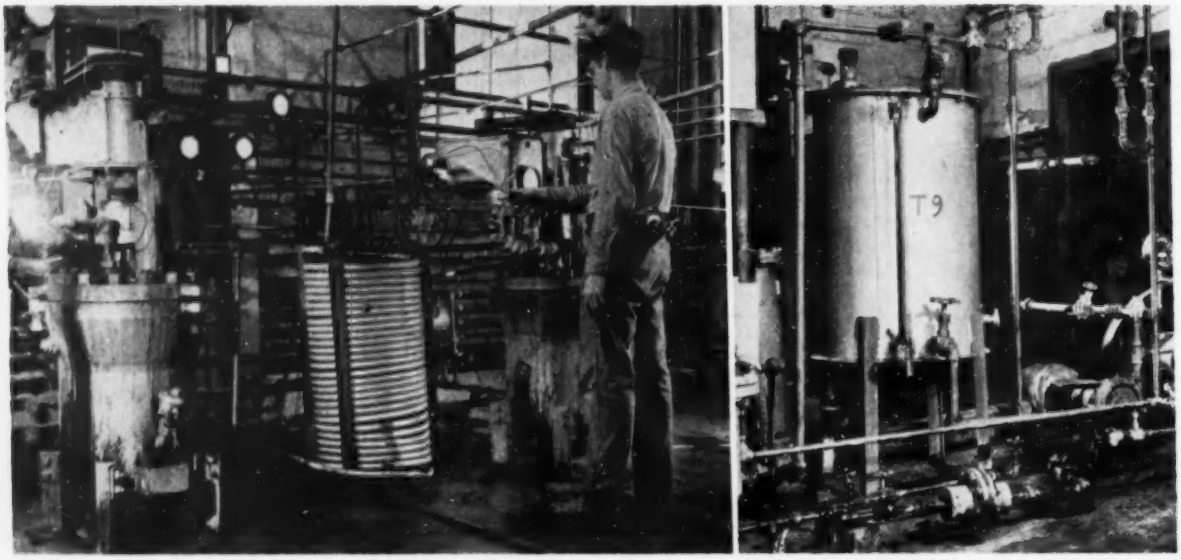
Final sizing is done by this 3 by 4-foot Allis-Chalmers screen, which is set at a steep angle. The 48-mesh screen cloth, in effect, acts as a scalper to remove any coarse particles. In actual practice, the flow across the screen is fast enough that some material in the 65- to 48-mesh size is also returned to the grinding circuit.

Filtering Heavy Media

Even after preliminary dewatering in the classifier, the ground material settles so rapidly that the center of the filter disk cannot pick it up. To prevent a loss of vacuum through the center portion of the filter disc, the area is blinded by an application of asphalt roofing cement. Only the outer six inches of each disk are used for filtering.

Filtrate water and the overflow of the Denver thickener are used for water in the grinding circuit. In theory, an excess at this point would go to waste with some media loss. In actual practice none does; and a small amount of clear makeup water is added periodically to the grinding circuit. The plant requires no tailing pond.

The final product, at between 6.3 and 6.5 percent moisture, drops from the filter to a shuttle conveyor which delivers it to a concrete storage room. The same Lull-Shovel loader which handles the incoming ferrosilicon ingots is used to load the ground material into five-ton Ford dump trucks. It is weighed on a Thurman platform scale and delivered to plants in the district as required.



LEFT: Key units of the new copper refining process are autoclaves (flanking the coils) where, under high temperatures and pressures with reducing agents, the copper is precipitated from solution. Two coils, one inside the other, (center) are for heat exchange—heat from precipitated copper leaving the autoclaves is transferred to solution going into them. RIGHT: Copper-bearing material is dissolved in a leaching solution. Solids are filtered out of the solution and the solution is then pumped to the measuring tanks that feed the autoclaves.

CHEMICO PROCESS RECOVERS METALS FROM CONCENTRATE IN A FEW HOURS

Important new techniques which will drastically reduce current costs of metals production and will speed up conversion of metal in concentrates to pure metal have been developed by the Chemical Construction Corporation. Commercial applications of the processes are already scheduled.

The new techniques involve the treatment of scrap and concentrates by chemical methods instead of the usual smelting and refining techniques to produce pure metal. Lower metal prices will not necessarily be the immediate effect because of the insistent demands for metals. However, according to William N. Porter, president of Chemical Construction, reduced metallurgical treatment costs will permit the economical mining of ore bodies with lower metal content.

Refine at Mine

Other savings may be realized by cutting transportation and personnel costs, and by reducing the present time lag between mining and pure metal from months to a matter of hours. Because material requirements are moderate in quantity and reasonable in cost, it will be possible in many cases to build an efficiently and compactly designed commercial scale plant at the mine site. Mines and mills, smelters and refineries are now often hundreds of miles apart. A plant at the mine site would not only cut transportation costs, a sizeable factor in current metals prices, but would also decrease production time lags which, extended over many months, frequently result in huge inventories of partially processed material and, in turn, cause serious dislocations in the metals industry.

Producers using the new processes will prepare a concentrate from the ore by conventional flotation methods, introduce the concentrate as a slurry into an autoclave, along with water and an acid or ammonia, then from the resulting leach solution, recover the individual metals by the use of suitable reducing agents. (See accompanying photographs.) By varying conditions during the treatment, the different metals in the ore are produced separately as pure powders. They may then be pressed into forms ready to market, or, in the case of copper, extruded as rods or pipe. The reagents are generally recovered.

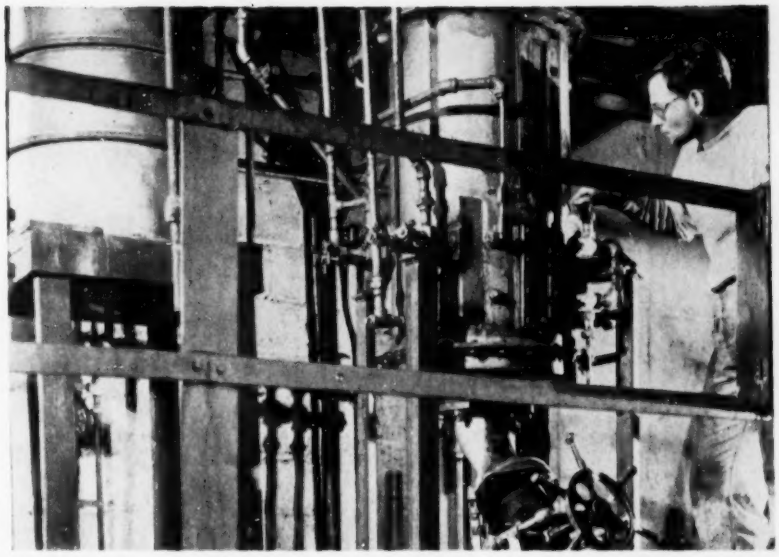
LEFT: William N. Porter, president of Chemical Construction Corporation. CENTER: Edward S. Roberts, vice president and chief engineer. RIGHT: Patrick J. McGauley, chief of the company's metals department.

Three Plants Now Building

First commercial use of the processes will begin this summer when Chemico expects to complete the building of a $2,500,000 cobalt refinery for Howe Sound Mining Company near Garfield, Utah. This plant will boost world output of the strategic metal, most of which comes from central Africa, by more than 40 percent. The plant will process daily 35 tons of 20 percent cobalt concentrates from Howe Sound's Blackbird mine near Cobalt, Idaho (see *Mining World*, November 1951). This will yield an annual production of some 2,000 tons of pure cobalt, about one-half of the United States' consumption of the metal in 1950.

Also under construction at the Fredericktown, Missouri, mine of National Lead Company is a $5,000,000 refinery which is scheduled for completion in mid-1953. With a designed capacity of 50 tons of concentrate per day, National Lead plans to maintain an annual production at this plant of 700 tons of cobalt, 900 tons of nickel, and 700 tons of copper, plus 7,500 tons of fertilizer-grade ammonium sulfate.

A unique development is the $17,000,000 nickel refinery now under construction for Sherritt Gordon Mines Limited at Edmonton, Alberta, in which the Sherritt Gordon ammonia leach process and Chemico's nickel reduction process are combined. The plant, scheduled to begin operation in the fall of 1953, will turn out mostly nickel and small quantities of cobalt and copper from sulfide ores mined at Sherritt Gordon's Lynn Lake mine in northern Manitoba. Annual production at the refinery is expected to be about 8,500 tons of nickel, 1,000 tons of copper, and 150 tons of cobalt, plus 70,000 tons of ammonium sulfate.

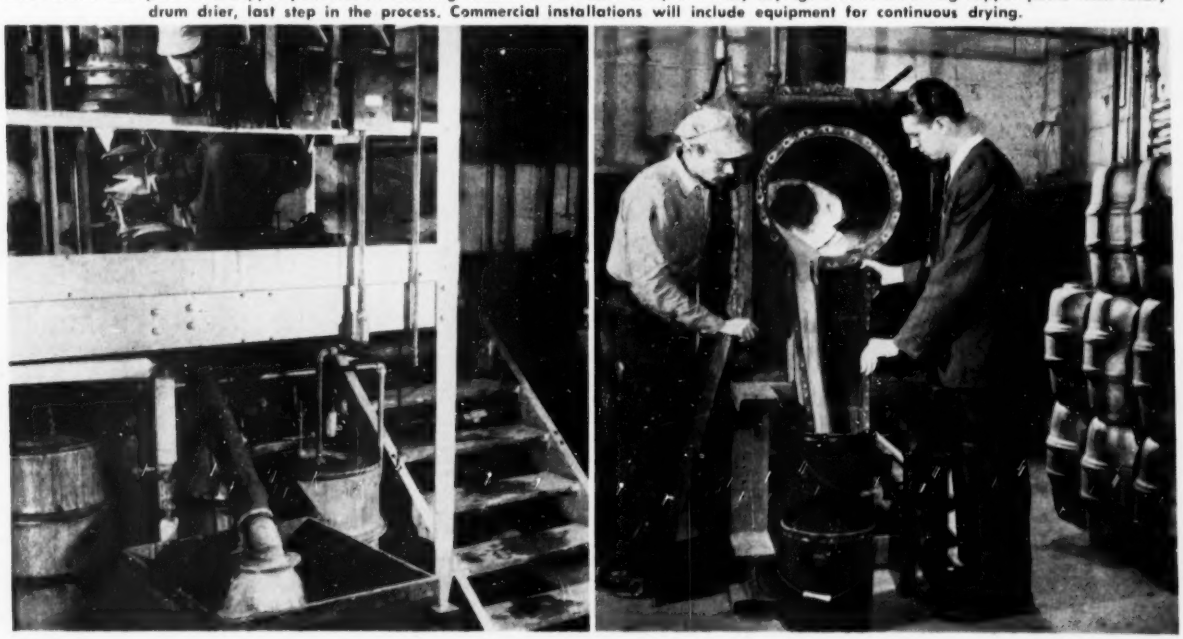


Washing tanks receive the copper after it is precipitated in autoclaves, wash away leaching solutions.

Rights to many of the processes are shared by Chemical Construction, a subsidiary of American Cyanamid, with Sherritt Gordon. During the past four years, Sherritt Gordon has contributed to the entire project by support of parts of the research program, by developing new processes, and by building and operating a pilot plant at Ottawa.

In the history of the development of the metals processes by Chemico, three men have played key roles: Edward S. Roberts, vice president and chief engineer; Patrick J. McGauley, chief of Chemico's metpals department; and Dr. Ludwig J. Christmann of Cyanamid's research laboratories at Stamford, Connecticut.

LEFT: Water and powdered copper pour out of washing tank into box filter for preliminary drying. RIGHT: Gleaming copper pours from rotary drum drier, last step in the process. Commercial installations will include equipment for continuous drying.



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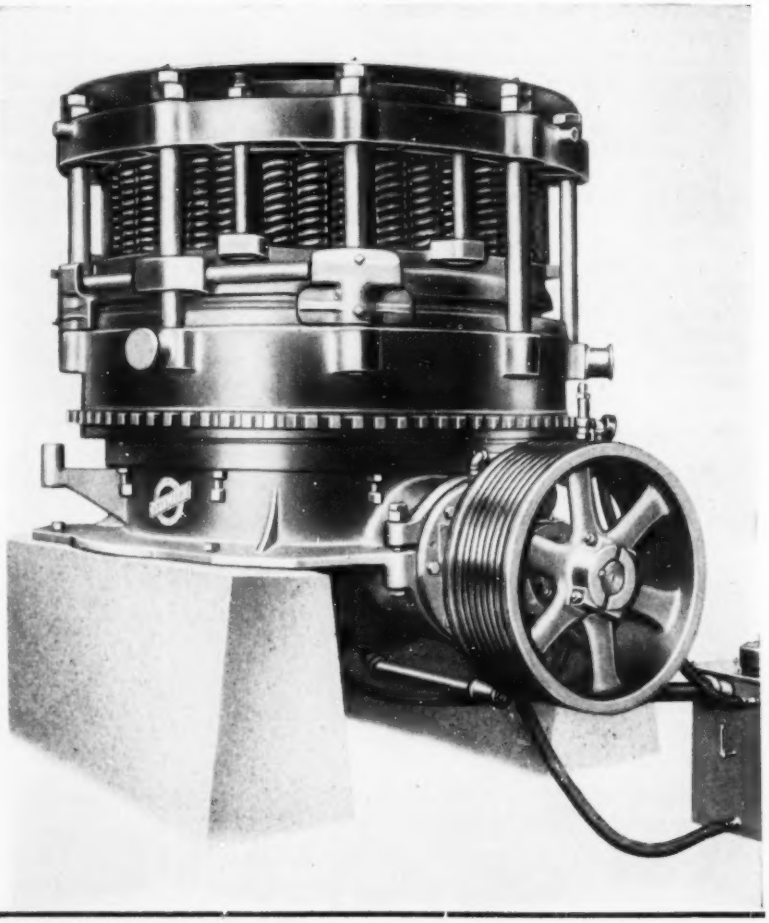

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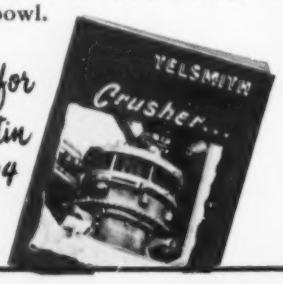

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HANNA IRON ORE CO. USES HEATED SCREENS TO SUCCESSFULLY DRY-SCREEN WET STICKY ORES

By Stephen E. Erickson and Masao Tanamachi

M. A. Hanna Company
Hibbing, Minnesota

Heated screens were introduced in order to solve the problem of successfully dry screening wet, sticky materials that would normally tend to blind the screen openings because of the material clinging to the screen wires.

The first application of the principle of heated screens in the iron ore field was made at the Portsmouth mine of the Hanna Iron Ore Company at Crosby, Minnesota. At this property two 5 by 14-foot, Ty-Rock, single-deck screens were converted to heated deck operation.

Ty-Rod screen cloth with a slotted opening $\frac{5}{8}$ by $4\frac{3}{4}$ inches in size was used. The ore was wet and "painty" and even with this type of screen cloth it was difficult to obtain an efficient screening job. However, the use of the heated screens greatly improved the screening efficiency.

How To Heat A Screen

The changes necessary to convert a screen to heated deck operation are quite simple and can be described as follows:

1. The screen cloth for this application is supplied with a crimped copper hooking strip along the entire length of each side of the cloth. It was found that best results were obtained with stainless steel cloth rather than with other alloys.

2. A layer of Micarta insulation is applied to the inside of the screen frame in order to insulate the screen cloth from the frame and driving mechanism.

3. The usual steel hooking strips or tensioning bars are replaced with heavy copper bus bars called packing strips which make contact with the screen cloth.

4. The electrical leads are bolted to these copper bus bars. At the Portsmouth mine, the screen cloth is in three sections and only the first two sections have the electrical connections. The three bus bars on each side of the screen are all bolted together, however.

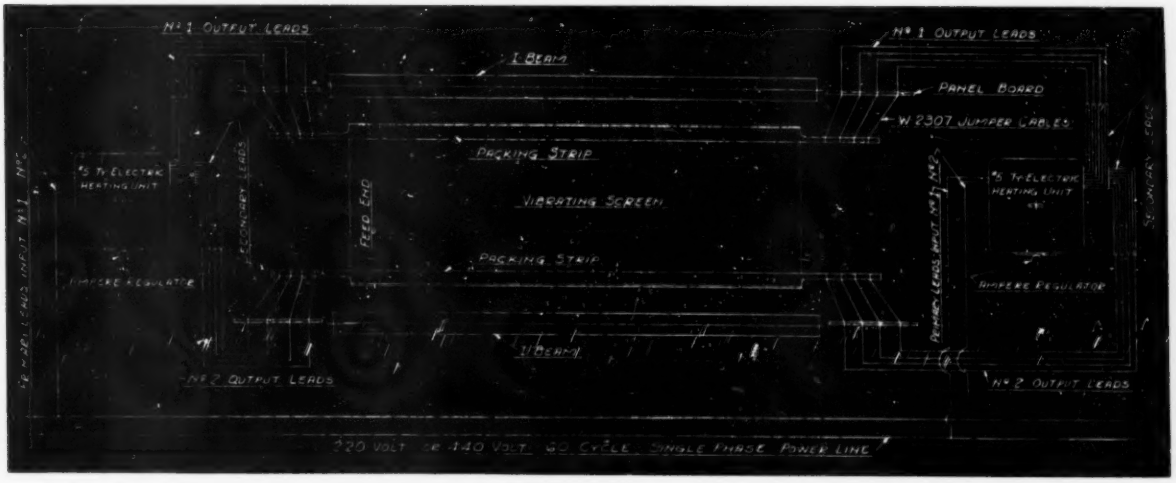
Heat Does Not Dry Ore

At the Portsmouth mine, two "heaters" are used for each screen. These are step-down transformer units that supply the current to the screen. The line current, or input, to these units is 440-volt, 60-cycle, single-phase. The output of these machines is seven-volt alternating current. Each unit supplies current at about 2,700 amperes to the screen.

The temperature of the screen wires in the two upper panels to which the current is applied directly will average about 180° F. The lower panel wire temperature will average about 75° F. From this it will be seen that the object is not to dry the ore but rather to keep the wires warm so that fine ore will not coat them. The theory of this appears to be that if a coating starts to build up on the wire, the lack of air circulation about the wire will tend to raise the temperature so that the coating material will dry out. During the drying process, it will tend to contract and crack; then the abrasion caused by the ore running over the screen will crack the coating loose and off the wires, thus cleaning them.

The above point of relatively low wire temperature must be emphasized because many people are ap-

Wiring diagram for heated screens.



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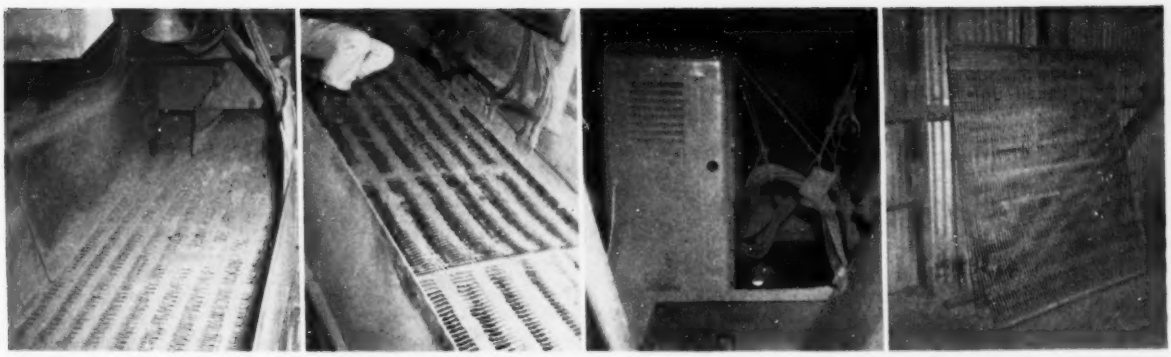
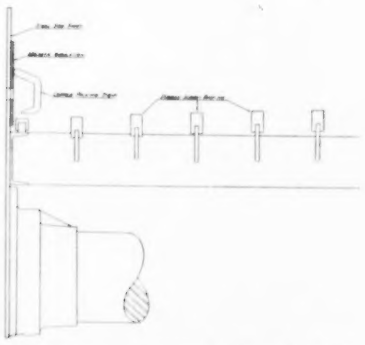


LEFT: General view of a heated screen deck at the Portsmouth iron ore mine at Crosby, Minnesota. Note the electric leads from the "heaters." LEFT CENTER: Screen deck showing the electrical connections. Ty-Rod screen cloth with a slotted opening ⅛ by 4¾ inches in size is used. CENTER RIGHT: View of a "heater" installed above the screen. RIGHT: Screen cloths showing the copper hooking strips along each side.

parently under the impression that a heated screen will tend to dry the ore.

The power consumption for each 5 by 14-foot screen is 39.6 kilowatts.

A set of stainless steel screen cloth will last an entire season in this



Changes made to screen deck in order to install the heated screen.

service. However, we have no comparison of effect of heating on screen cloth life because stainless steel cloth was not used previously. On fine screening jobs on other materials where much beating and brushing of screens was required to keep them open, it is claimed that heating has increased the life of the cloth by three to seven times.

Eight heavy lead wires come out of each side of each of the "heaters" to the screen, where they are paired and bolted to the bus bar. With two heaters there are then four connections on each side of each screen panel. Similar leads from both "heaters" must be kept on the same side of the screen.

With low temperature and low voltage applied to the screen cloth there is no danger to personnel.

Overhead Leads

An interesting point is that the "heaters" must be installed above the screens so that the leads can be brought directly down to the bus bars or packing strips. At the Portsmouth the heaters were originally installed back of the screens and the lead wires were brought around the frame and then connected to the cloth. With this arrangement, the screen frame and mechanism were heated by induction but there wasn't enough current left over to heat the wire cloth. When the leads were changed to come from overhead, this difficulty was corrected.

The principal problem remaining on this type of screening is to secure uniform current distribution to all of the wires in the cloth. If the tension on all of the wires is not uniform, the tight wires will receive more current and will overheat causing glowing hot spots while the loose wires will not heat at all. This can be corrected by tightening loose wires with a bar, for example. Another cause of poor heat and current distribution is poor contact in the crimped copper side strips on the screen cloth. Some of these were filled with solder and the results were improved, but if hot spot developed due to tension adjustments, the solder melted out. The best suggestion to solve this problem seems to be to spot weld each wire into the copper hooking strip.

Connection Problems

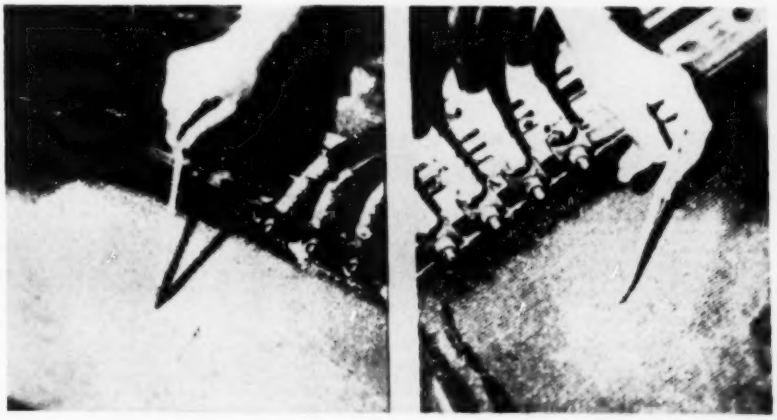
Another problem is to make a connection between the lead wires and the lugs that are bolted onto the bus bars on the screen cloth. The combination of current, temperature, and vibration tends to destroy soldered connections and to break off peened connections.

It would appear that the possibility of successful application of the heated screen principle would increase as the size of screen opening decreases.

The apparatus for converting to heated screen operation is manufactured by several organizations. The principal suppliers include the W. S. Tyler Company, Cleveland, Ohio, T. R. Hannon & Sons, Canton, Ohio, Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin.

Also Deister Concentrating Company, Fort Wayne, Indiana—Ed.

Fine mesh screening being applied to the screen cloth without heat (LEFT) and with heat (RIGHT).



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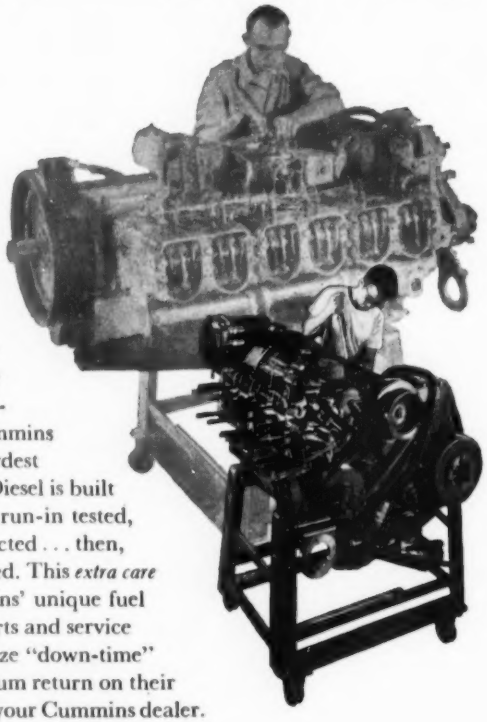

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Muriel Sibell Wolle Describes

CENTRAL CITY SAMPLINGS

Shortly after John Gregory found the first gold lode in Colorado on May 6, 1859, 5,000 miners sloshed up and down the gulch above Clear Creek sluicing pay dirt from the stream, crawling into tents or hastily constructed cabins on the mountain slopes at night. In the summer of 1860, Horace Greeley visited the Gregory Diggings; washed a pan of gold from the stream (the miners salted the gravel so he would be sure to get plenty of colors); and, upon his return to New York, urged the young men of the country to "Go West" where opportunity beckoned in the form of gold at the grass roots.

Even before Greeley's visit, the camps of Mountain City, Black Hawk, Central City, Nevadaville, and Russell Gulch were laid out. The first feverish rush was over and Central City's permanent population exceeded 800. Not that living was easy in the high mountain town, 8,500 feet above sea level. An extract from a letter written on October 1, 1860 to the *Rocky Mountain News* complains: "It is quite cold here o'nights, and we have some threatenings of snow. There is an awful surplusage of ventilation about our cabin, and I have nightly misgivings that I shall be blown through the cracks but Providence watches over us all."

The gulches around Gregory Point provided an inadequate amount of water for sluicing and one of the first cooperative projects that the miners undertook was the construction of the 10-mile-long Consolidated Ditch. It tapped the head waters of Fall River above Idaho Springs, and supplied Russell Gulch and the other mining camps through which it passed, as well as Central City, with 150 inches of water. The open ditch was completed in July 1860 at a cost of $100,000, and it furnished water from May to November.

The Gregory, the Burroughs, and the Bobtail lodes, were among the first to be discovered in the district, and the hand-driven Bobtail Tunnel, opened in 1863, is the oldest tunnel in the state.

Pat Casey, an uneducated Irishman, worked in the Burroughs mine for $2.50 a day. On Sundays he prospected, and from time to time bought claims from the Burroughs brothers. An accidental cave-in on his property opened one of the richest bonanzas in the district and Pat became a wealthy man and a prominent figure in Central City.

As soon as he struck it rich, Casey bought expensive clothes, drove a span of fine black horses about the city's steep streets and always carried a large gold watch. Everyone knew that he could neither read nor tell time, and they liked to tease him by asking him the hour. He would hold out the watch and say "Here, see for yourself. You'd not believe me if I told you." In 1863 he went to New York and sold his mine for a fancy price. While there he stayed in a large hotel, and was so afraid he would lose his way in the maze of corridors that he blazed a trail between his room and the lobby. That practical precaution cost him $2,900.

Shortly before his assassination in 1865, Abraham Lincoln sent a message by Schuyler Colfax to the miners of Central City. It was delivered to the assembled men by Colfax at a public meeting. In it the President urged the men to continue their search for gold and he concluded by saying: "Tell the miners for me that I shall promote their interests to the utmost of my ability, because their prosperity is the prosperity of the nation and we shall prove in a very few years that we are indeed the treasury of the world."

Teller House, Central City, built in 1872, as seen from the Masonic Building on Eureka Street.

The news of his assassination so greatly upset the miners that when William Taber, a Kentuckian recently arrived in Central City, was overheard to say that he "was glad Lincoln was shot," that "it served him right," an angry mob talked of lynching the southerner on the spot. To protect him from violence, the sheriff arrested him and lodged him in jail, but the townspeople still plotted to hang him that night. To avert this, the sheriff and Henry M. Teller, a level-headed lawyer, held a people's trial in the theatre, and Teller, by his oratory, persuaded the men to let justice take its course. Taber was sent to Denver, given a military trial, and sentenced to carry a 60-pound sack of sand, six hours a day for 30 days.

By the middle 1860's, the easily milled, decomposed quartz which had drawn men to the diggings was exhausted. As the mines were sunk deeper, refractory ore was encountered. The stamp mills were unable to cope with this and, until other methods of reduction and smelting furnaces were built, mining slumped. Although the first smelting experiments were made by Dr. Burdsall at Nevadaville in 1859, the first successful smelter was erected, under the supervision of Nathaniel P. Hill, at Black Hawk in 1867. By 1868 Central's mines—the Gregory, Bobtail, Burroughs, Comstock, Bates-Hunter, Buell, and Gunnell—were "running big" and provided plenty of work for the Irish and Cornish miners who made up most of the population.

All through the 1870's, mines were active and the many properties sent 400 wagon loads of ore per day to the mills in Central and in Black Hawk. But mine owners protested at the amount of ore that was lost from

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the time the heavily loaded wagons left the mines until they reached the mills. They also complained that "the haulers use quartz to fill up chuck holes whenever necessary." In addition to the ore wagons, the streets were full of 'wood haulers.' As one old-timer said to me, "All the mines burned wood before the railroad came. Everyone burned wood. No wonder the hills are bare."

Central City ranked next to Denver in size in 1873 and its Teller House, built the previous year, was the talk of the Territory. Outside the entrance to the hotel's bar was a large sign—"The Elevator." Guests arriving by coach alighted, looked up at the four-story building, read the sign, and hurried toward it. Once inside, they found no 'lift' but that provided by the excellent bar, which was kept "well supplied with things to cheer and inebriate."

The business office on the first floor contained the "splendid collection of minerals and geological specimens of the Miners' and Mechanics Institute; the adjoining reading-room held the society's well-chosen library." Only the east wall of the Teller House lobby has been left intact since 1872, and it still contains the two ceiling-high cabinets filled with the original mineral display. The Miners' and Mechanics Institute held its first meeting in the Baptist chapel on Lawrence Street in 1866 and stated its aims as follows: "1) To institute a system of scientific lectures, debates and essays. 2) To establish a library and reading room. 3) To collect and preserve a cabinet of minerals, natural curiosities and specimens of various departments of science and historical matter relating to the history of the Territory. 4) To promote the interests of mechanic arts." When the organization dissolved in 1873, it offered its library of approximately 1,000 volumes to the Central City public school for $300. The offer was accepted, and the books are said to have formed the first public school library in Colorado.

In 1873 President Grant visited the mountain metropolis and was escorted into the big hotel on a pavement made of silver bricks valued at $12,000. The silver was borrowed from A. D. Breed's mine at Caribou, 20 miles away, because gold was so common in Central that only silver was a rarity.

Grant arrived in front of the hotel and alighted. "He was quite incredulous when told that the slabs were genuine silver, but had finally to accept the truth." After a reception held in the hotel's spacious parlors, the Presidential party left by stage for Idaho Springs. Jim Allen, "one of the very best of Colorado's reinsmen" drove the Concord coach with its "six dashing bays." At the top of the divide, some one in the party asked Jim how far it was to the foot of the hill and he replied, "Four miles." "How long does it take to go down?" "About 17 minutes." "Well," said the questioner, "We don't want to run any risks and if it should take a little longer we shouldn't care." "Hell," said Jim, "Don't you suppose I think as much of my neck as you do of yours?" Twelve minutes later the party drew up with a flourish in front of Idaho Springs Beebe House.

By 1879 mine properties were being consolidated and tunnels were being driven through the hills to connect the principal lodes. Of the 325 mines listed in Gilpin County 68 of the larger properties were owned by eastern companies. The decrease in mining activity began in 1909 and never again has it reached boom proportions. The total value of production from the mines of the county from 1859 through 1951 is estimated at $104,997,404. A few leasers and one or two companies are continuing to explore those properties where ore is still known to exist, but on the whole Central City mines are quiet.

"Bedeviled Copper" helps to build a battleship

• The hard, ductile, malleable metal known as NICKEL derives its name from "kupfer-nickel", meaning *bedeviled copper,* a name given it by superstitious medieval Saxon miners. These miners, in uncovering what appeared to be a fresh lode of silver ore, thought the devil of the earth, *"Old Nick",* had cast a spell over their ore since it could not be hammered into useful articles . . . *and it was several hundreds of years later that Cronstedt's discovery led to the actual recognition of nickel.*

Among the thousands of ways in which nickel now serves man is in the construction of a modern battleship—where this versatile corrosion-resistant metal is used in armor plate, gun tubes, and scores of other ordnance, navigational and communications material.

From the opening of the first Sudbury mine in 1886, the history of nickel is largely that of *International Nickel Company,* who today produce fully 75% of the world's total nickel output. Playing an important role in International Nickel Company's production are twenty *"SYMONS"* Cone Crushers . . . which are recognized throughout the world for their ability to efficiently produce a great quantity of finely crushed product at low cost.

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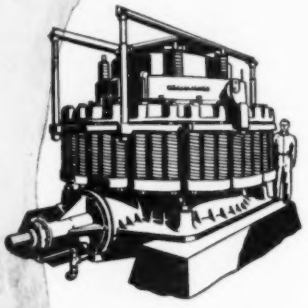

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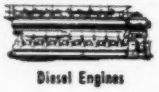

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ACTIVITIES OF U. S. MINING MEN

WILLIAM H. KING, acting chief of the U.S. Bureau of Mines Mining Division in Denver, Colorado, has been appointed executive officer of the Defense Minerals Exploration Administration's field team in Region IV. The field team reviews applications for mineral exploration assistance from Colorado, Utah, Wyoming, New Mexico, and Arizona.

Irving S. Olds has recently announced his retirement as chairman of the board of directors of the United States Steel Corporation. He was succeeded by **Benjamin F. Fairless,** who will continue his post as president of U. S. Steel, as well as assuming the duties of chairman of the board. Mr. Olds, who has been chairman of the board since June 4, 1940, will resume active practice with White & Case, New York law firm of which he has been a member since 1917. He has been a director and member of the finance committee of U. S. Steel Corporation since 1936 and will continue to serve in both of these capacities. **Roger M. Blough,** executive vice president—law, and secretary of U. S. Steel Company, operating subsidiary of the corporation, was appointed vice chairman of the board of directors, a new post.

Ralph L. Hennebach, assistant superintendent of the El Paso, Texas, zinc smelting plant of American Smelting and Refining Company, has been awarded an Alfred P. Sloan Fellowship for the executive development program at the Massachusetts Institute of Technology. Mr. Hennebach is one of 18 young industrial executives selected in nationwide competition to participate in an intensive one-year study of the economic, social, and management problems of industrial administration.

James Douglas has been named deputy director of the Defense Materials Procurement Agency's new Region III office in London, England. In his new position, Mr. Douglas will assist **Brigadier General Thomas B. Wilson,** director of Region III, in directing DMPA's activities in all of free Europe, the Middle East, and North Africa.

George M. Humphrey, president of the M. A. Hanna Company for the past 23 years, was elected chairman of the board and chief executive officer of the company at the annual directors meeting. The directors also named **George H. Love,** president of Pittsburgh Consolidation Coal Company, vice chairman of the Hanna board; **R. L. Ireland,** a Hanna vice president, chairman of the executive committee; and **Joseph H. Thompson,** also a vice president, president and chief administrative officer. Mr. Humphrey, as chairman of the board, will remain in active executive direction of the company's affairs.

Dr. William D. Coolidge, director emeritus of the General Electric Research Laboratory in Schenectady, New York, is the first recipient of the K. C. Li Medal for meritorious achievement in advancing the science of tungsten. The gold medal, which carries with it a prize of $1,000, was awarded to Dr. Coolidge "for conception and development of a method for obtaining ductile metallic tungsten to the benefit of all mankind." The award was established in 1948 through a permanent fund donated by K. C. Li and will be awarded every two years.

Norman B. Melcher, mineral economist and commodity specialist with the U. S. Bureau of Mines in Washington, D. C., has been appointed chief of the Ferrous Metals and Alloys Branch of the Bureau's minerals division. Mr. Melcher, succeeding **Robert H. Ridgeway,** will direct preparation of the Bureau's over-all research and development program for such commodities as iron, steel, manganese, chromium, and tungsten.

EDWARD J. DUFFY, general superintendent at Kaiser Steel Corporation has been appointed assistant to the works manager in charge of iron ore and coal production at company-owned mines at Eagle Mountain, California, and Sunnyside, Utah. Mr. Duffy joined the Kaiser organization in 1942 after more than 20 years with the Carnegie-Illinois Works. He is succeeded in his former position at Kaiser by BARNEY DAGAN.

J. Frank Geary has been named head of the mining division of Holmes & Narver, Inc., Los Angeles, California. Mr. Geary, a prominent mining engineer, has designed and supervised construction of many ore processing plants in North and South America. He is also the inventor of two widely used metallurgical machines, the Geary Reagent Feeder and the Geary-Jennings Automatic Sampler.

Earl Cook, assistant professor at the University of Idaho school of mines, has been promoted to acting head of geology at the school. Mr. Cook was formerly connected with the U. S. Geological Survey and Geophoto Services, Denver, Colorado. He has also been a student at the University of Paris, France, and the University of Geneva in Switzerland.

W. C. Flinn of St. Paul, Minnesota, has been named executive vice-president of seven proprietary companies of Great Northern Iron Ore properties: The Arthur Iron Mining Company, North Star Iron Company, Grant Iron Mining Company, Polk Iron Mining Company, Fillmore Iron Mining Company, Minnesota Colonization Company, and Mesabi Range Townsite Company.

William H. Burgin is now a field engineer for the Kennecott Copper Corporation with headquarters in Denver, Colorado. He formerly was mining engineer for the Geneva Steel Company at Provo, Utah.

Forrest T. Moyer, chief of the accident analysis branch of the U. S. Bureau of Mines, has announced his resignation from that post to accept a position with another government agency.

J. S. Wilbur has been appointed manager of the ore sales department of the Cleveland Cliffs Iron Company to succeed the late **William M. Green.** Mr. Wilbur is the former assistant manager of the ore sales department.

Orville L. Sloan has been named mine maintenance relief foreman for International Minerals and Chemical Corporation. His former post as surface maintenance relief foreman in the refinery and chemical plant has been taken over by **Herman D. Lamberth.**

E. J. Farley, former mechanical and electrical superintendent with the Copper Canyon Mining Company, is no longer with that company and is now located in Wadsworth, Nevada. Prior to his Copper Canyon post, Mr. Farley acted as master mechanic and electrical engineer for the M. G. L. Mining Company in Nevada, California, and Arizona.

Don Jenkinson, chief of Western Machinery Company's service department, is spending three months in the Belgian Congo advising operators of the new Bakwanga HMS plant. **Sam Moses,** service engineer for the same company, is in Bolivia, South America, assisting in final construction and initial operation of four HMS plants.

Dr. Robert J. Anderson has been named head of the newly established department of metallurgy at the Southwest Research Institute, San Antonio, Texas. Dr. Anderson, a doctor of science from the Massachusetts Institute of Technology, has had 35 years experience in industrial, government, and educational fields.

LESTER G. MORRELL has been appointed chief of the North American Division of Region IX (Foreign Minerals) of the U.S. Bureau of Mines with headquarters in Washington, D.C. In his new post, Mr. Morrell will serve as technical expert and commodity specialist on problems relating to the resources, development, production, and foreign trade of minerals and metals in Canada, Greenland, Hawaii, and Bermuda. He has been with the Bureau's North American Division since 1950, and is considered an authority on gold, silver, lead, and zinc ores. He has had wide experience as a mining engineer in Quebec, Ontario, Manitoba, British Columbia, northwestern United States, Alaska, and Cuba.

Robert A. Blake, former superintendent of American Smelting and Refining Company's Mike Horse mine at Mike Horse, Montana, has been appointed mill superintendent at Asarco's new 1000-ton Van Stone zinc flotation plant in Stevens county, Washington. **Bruce Campbell,** formerly of Day Mines, Inc., Wallace, Idaho, has succeeded Blake at the Mike Horse.

F. J. Pettijohn, professor of geology at the University of Chicago, has completed field work in the Menominee range, Michigan, area, which he had been doing for the U. S. Geological Survey. Also serving on the Menominee range for the U.S.G.S. is **Jacob Gair,** formerly on the teaching staff of the University of Oregon.

John Brophy, operator of the Franklin mine at Helena, Montana, was recently elected president of the Last Chance Gulch Mining Association, the Helena chapter of the Mining Association of Montana. **Jackson Nichols,** metallurgist for the American Smelting and Refining Company, **Herbert Obendorf,** of the Montana Rainbow Engineering Company, and **Charles R. Brazier,** of Helena, were elected as vice presidents.

Allan R. Johnson, civil engineer of Ashland, Wisconsin, has taken a position with the Reserve Mining Company at Beaver Bay, Minnesota.

W. B. Hoover of Albuquerque was elected president of the New Mexico Geological Society at the society's sixth annual convention held in Socorro. Mr. Hoover, a geologist for the Humble Oil and Refining Company succeeds **C. B. Read.**

H. B. Sharpe of the National Production Authority's Miscellaneous Metals and Minerals Division, presided at a meeting of selenium producers in Washington, D. C., recently. Members of the committee told NPA officials that little improvement in the supply of selenium can be expected in 1952. Selenium is a by-product of electrolytic copper refining and unless there is an increase in copper production there can be no substantial increase in selenium. Representing the industry were **Richard E. Wolff,** American Metal Company, Ltd.; **Leslie G. Matthews,** American Smelting and Refining Company; **Clarence Glass,** Anaconda Sales Company; **Joseph C. Abeles,** Kawecki Chemical Company; **Frank B. McKown,** Kennecott Sales Corporation; and **Charles H. Winship, Jr.,** Phelps Dodge Refinining Corporation.

Harry G. Gerber, superintendent of the Zontelli Brothers, Inc. iron ore washing plant at Ironwood, Michigan, has been transferred to the company's operations on the Cuyuna Range in Minnesota.

Blair Burwell was reelected president of the Minerals Engineering Company, along with **R. G. Sullivan** as vice president, **W. G. Haldane** as treasurer, and **A. F. Boyd** as secretary. All directors were also reelected.

Lawrence B. Berger has been appointed chief of the Health Branch of the U. S. Bureau of Mines' Health and Safety Division. Mr. Berger has been acting chief since 1948 when **Dr. H. H. Schrenk,** former head, transferred to the Public Health Service.

Robert B. Freeman has been promoted to assistant to the vice president—operations of Columbia-Geneva Steel Division of the United States Steel Company. **Charles H. Fitzwilson** will succeed him as chief metallurgical engineer.

John C. Houston, Jr. has been appointed executive vice chairman of the Department of Defense Munitions Board. Mr. Houston who has been serving as vice chairman for stockpile and international programming, will temporarily serve in the same capacity. He came to the Munitions Board from the White House staff where he served from March 1950 as a special assistant to **Dr. John R. Steelman,** the assistant to the President.

Nathan Lamphere, formerly chief electrician for the Evergreen Mines Company in Minnesota, is now with the Pacific Isle Mining Company in that capacity.

R. D. Bradford was elected a vice president of the American Smelting and Refining Company at a recent board of directors meeting. He has been general manager of the company's Western Department, Salt Lake City, Utah. **Richard G. Croft** was also elected a director of American Smelting and Refining. Mr. Croft is a partner in J. H. Whitney & Company, and holds executive posts with several other companies.

Dr. Stanley W. Sundeen has been appointed an assistant manager of the Cleveland Cliffs Iron Company's iron ore mining department. He will be located at Ishpeming, Michigan, and will have charge of extending and developing the company's iron ore reserves.

ACTIVITIES OF INTERNATIONAL MINING MEN

Perfecto K. Guerrero of Manila, Philippine Islands, has been named recipient of the William Petit Trowbridge Fellowship in Engineering at Columbia University, New York. Mr. Guerrero will continue experiments with nickel extraction which he began in 1950 under another fellowship. On completion of his studies at Columbia, Mr. Guerrero plans to return to the University of the Philippines.

H. B. Megill has been named executive vice president and general manager of Pacific Northwest Alloys, Inc., which operates the U. S. government-owned Mead magnesium plant near Spokane, Washington. Mr. Megill is the former general manager of Dominion Magnesium, Ltd., at Haley, Ontario.

M. Leon Dayton, former chief of the Mutual Security Agency's special mission to Italy, has been named chief of the MSA special mission to Turkey, with headquarters at Ankara. Mr. Dayton has been in Rome since 1948 when he helped launch the program of Marshall Plan aid to Italy.

Frank A. Forward of the University of British Columbia's metallurgy department, has developed a new leaching process for copper, nickel, and cobalt. The process is in use at Sherritt Gordon Mines Ltd., Manitoba, Canada.

Dr. N. M. van Doorninck of The Hague, Holland, has left for Pretoria, in the Union of South Africa, to explore mining prospects for the Billiton Maatschappij Company. He was accompanied by **Dr. J. M. G. Fuchter,** a regular staff member of the Billiton Company.

Dr. Carlos Paradisi, Venezuelan Director of Mines, recently made a visit to Duluth, Minnesota, and the iron ranges as a guest of the Oliver Iron Mining Division.

Roy B. Earling, vice president and general manager of the Fairbanks Exploration Company, Fairbanks, Alaska, recently returned to his home after five months spent traveling in the United States. While in Boston, Mr. Earling conferred with officials of the U. S. Smelting, Refining and Mining Company.

Minoo P. Netarwala, professor of mining and metallurgy at Benares Hindu University, Benares, India, has been awarded a UNESCO fellowship to visit the mining areas and schools of France. He may be reached at the Comite d'Accueil aux Etudiants Etrangers, Paris, France.

W. W. Staley, professor at the University of Idaho school of mines, is planning a year's work in the Philippine Islands to improve technical education in the field of mineral industries. Professor Staley will serve at the University of the Philippines in Manila as an employee of the United States Mutual Security Administration.

Dr. Lloyd M. Pidgeon, metallurgy professor at the University of Toronto, Canada, and consulting engineer with Dominion Magnesium, Ltd. of Canada, recently inspected the Mead magnesium plant in Spokane, Washington. The Mead plant is using the method developed by Dr. Pidgeon for the reduction of magnesium from dolomite ores. This famous process was perfected by Dr. Pidgeon while he was working as a Canadian government employe at the Canadian National Research Council in Ottawa. For his outstanding work in this field, he was awarded the Order of the British Empire.

M. K. SANDVIK, a Norwegian mining specialist employed by the Orkla Mining Company (Orkla Grube-Aktiebolag) at Lökken Verk, Norway, recently completed a trip through the Union of South Africa, Northern and Southern Rhodesia, and the Belgian Congo.

J. A. C. Ross is the new mine superintendent for the Granby Consolidated Mining, Smelting and Power Company, Ltd., at Copper Mountain, British Columbia, Canada. The position was formerly held by **R. S. Douglas** who is now with the Canadian Exploration Company at Salmo, B. C.

R. W. Stramler, manager of Cia Minera de Oriente, Capeltique, in El Salvador, is spending a short vacation with his family in Stephenville, Texas.

E. Namikawa, president of Taiheiyo Kabushiki Kaisha (Pacific Mining Company, Ltd.); **T. Yoda,** mining engineer for the same company; and **S. Nishizawa,** geologist for Nippon Kogyo K. K. (Nippon Mining Company), all of Japan, have completed an extensive examination of base metal mines in the Philippine Islands.

Harry Hey, managing director of the Electrolytic Zinc Company of Australasia Ltd., in Tasmania, Australia, has been awarded the 1951 medal of the Australasian Institute of Mining and Metallurgy.

Al Valguth, head of the mining department of Elizalde and Company in the Philippine Islands, has returned from a trip around the world with his family.

Olof A. Handquist, mining engineer of Stockholm, Sweden, is now employed as mine foreman for the Mauricio Hochschild Company at Cia Huauchaca de Bolivia in Pulacayo, Bolivia.

Sir Douglas Mawson, professor of geology and mineralogy at the University of Adelaide, Australia, will retire at the end of 1952. He has been with the University since 1905.

Lee Hinckley has just returned to the Philippine Islands from Japan, where he negotiated a million-dollar loan and contract for the Philippine Iron Mines. He is now in full charge of the company's underground development at Larap, Camarines Norte, Philippines.

Juan Lechin, head of the Bolivian tin miners union, has been appointed Minister of Mining and Petroleum in Bolivia. Mr. Lechin was named when a new cabinet was formed by the Nationalist Revolutionary party.

F. S. Watcha, who is with the Tata Iron and Steel Company, Ltd., in Bihar, India, is in Europe for four months. He may be reached via the Tata office in London.

Ian D. Cameron has resigned as general manager of Big Bell Mines Ltd., in Australia, to accept a position as manager of operations for King Island Scheelite Ltd., also in Australia.

A. J. Keast, formerly associated with the Broken Hill Associated Smelters and the Zinc Corporation, Ltd., both of Australia, is now with the Australian Aluminium Production Commission. Mr. Keast is in charge of the construction of an aluminium plant in Tasmania.

John Dana has been made superintendent of mines for both the Balatoc Mining Company's Acupan mine and the Benguet Consolidated Mining Company's adjacent mine at Antamok in the Philippine Islands. Both mines are operated by Benguet Consolidated Mining Company with a common all-cyanide mill at Balatoc with a capacity of 4,000 tons of gold daily.

Clyde Osburn, field engineer for the Western Machinery Company, has returned to the U. S. after a two-month trip to Peru, Bolivia, and Chile where he trained mill employees in the operation of Western Machinery products. He was in Bolivia when the revolution broke out, but experienced no difficulties.

Sandy Cutting has been appointed mine superintendent of the Itogon Mining Company in the Philippine Islands. He was formerly in Okinawa where he was employed with the Morrison-Knudsen Company.

DR. PAUL D. MERICA, executive vice president and a director, has been elected president of The International Nickel Company of Canada, Ltd., and its U.S. subsidiary, The International Nickel Company Inc., succeeding DR. JOHN F. THOMPSON who will continue as chairman of the board. Dr. Merica who has evolved numerous iron-nickel and copper-nickel alloys, first joined the company in 1919 as director of research.

Freedom is on the march!

The freedom America celebrates on the Fourth of July has a special significance to anyone in the Western world whose life work in mining or metallurgy has contributed to our ever-increasing supply of strategic minerals.

But freedom to march resolutely ahead must be—and now is—amply possessed of the metal sinews with which to defend its security and expand its benefits to all.

To help achieve this end, Cyanamid has devoted over three decades of research to product and process development and application—first in Cyanidation, then in Froth Flotation, and latterly in Processes for Separation by Specific Gravity Differences.

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Tremendous new bodies of high-grade ore have been discovered and are being developed. But, equally important, beneficiation of lower-grade ores by Heavy-Media Separation, the Dutch State Mines Cyclone Separator and Froth Flotation is indefinitely prolonging the economic life of the Range and opening new vistas for beneficiating iron ore deposits world wide. Witness results recently reported on fine-ore beneficiation (¼" x 65 mesh) at a western Mesabi concentrator using two 12" Dutch State Mines Cyclone Separators capable of treating 125 tons per hour. Concentrate from feed containing 48.6% Fe and 26.5% SiO_2 assays 60.0% Fe with SiO_2 as low as 10.1%, a practical duplication of heavy-liquid results with power consumption and medium loss acceptably low.

Equally noteworthy advances are being made in base-metal and non-metallic concentration. New reagent combinations and better treatment methods (alone and in combination with Processes for Separation by Specific Gravity Differences) are expanding the output of such strategic minerals as antimony, chromite, cobalt, industrial diamonds, fluorspar, manganese, molybdenum, sulphur, tin and tungsten.

Specialized reagents – such as Aerofloat 226 and 213 and Cyanamid 400, 600 and 800 Series Reagents – added to traditional reagent combinations are helping to produce higher grade concentrates at economic costs, particularly in the treatment of oxidized lead ores and complex sulphide ores. New Cyanamid Reagents and processes in advanced stages of development promise to provide unique new methods for increasing recoveries of strategic minerals.

To help you capitalize on these developments, we have prepared resumes of current practice and avenues of approach to better beneficiation. These special technical bulletins are practical guideposts to progress in solving beneficiation problems. They are offered without obligation, as a preliminary to discussion with Cyanamid Field Engineers, located in all important mining districts. The Cyanamid Mineral Dressing Laboratory staff is also available for consultation on your particular problems.

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INTERNATIONAL NEWS

Bolivia Takes Steps To Nationalize Tin Mines

Steps toward nationalization of Bolivia's tin mining industry were taken with the formation of a commission to study ways and means of nationalizing, through expropriation, mines controlled by the big three of the industry—Patino Mines and Enterprises Consolidated Mauricio Hochschilds (S.A.M.I.), and Cie. Aramayo de Mines en Bolivie.

A government decree gives presidency of the commission to "a representative of the ministry of mines and petroleum." Head of this department is Juan Lechin, labor leader of the tin miners and foremost exponent of immediate nationalization. Other members of the commission will be representatives from the ministries of economy and finance; the director general of mining; representatives of the Mining Bank and the Miners' Union; a mining engineer; a lawyer; and a financial auditor.

A plan will be prepared for "complete legal expropriation" of mines, which would include payment of indemnity to tin mine owners. The plan is to be submitted to the government for approval within 120 days.

More Gold Available for "Free" Market from Africa

The Free or premium gold market has reached a most interesting state. The decision of the West African and Southern Rhodesian governments to allow producers there to sell on the Free market as much gold from current output as they like will release a considerably greater amount of gold at "premium" prices at a time when the price is at one of its lowest points ($37.00).

Approximately 1,184,000 additional ounces will be available annually for sale as the two governments have already been allowing 40 percent of gold produced to go to the Free markets. The mining returns for March indicate that the full South African quota of Free gold is being sold without difficulty and suggest that the 40 percent of production permissible may even have been exceeded. The importance of the extra $2.00 to $3.00 an ounce from these premium gold sales was well illustrated in the recent report of the Union Corporation, Ltd. It showed that in 1951, out of a total gold production of 25,700,000 ounces, no less than 18,300,000 went into nonmonetary channel—mostly hoarding—leaving only 7,400,000 ounces to reinforce monetary reserves.

The maintenance of this source of income is of critical importance to some gold mines and of great importance to most. If this additional volume of gold causes the Free price to drop to the official level of $35.00 an ounce, it will mean the closing of many mines.

Of the 18,250,000 ounces that went to the Free markets last year, some 5,000,000 were hoarded in the Far East and 5,000,000 in Europe. The maintenance of the premium price thus seems to rest on the continuance, even increase, of hoarding. This, in turn, depends on the political conditions. In the East, these continue to be favorable for hoarding, but in Europe the possibility that France, the biggest hoarder, may find some sort of stability is disquieting miningwise though desirable in a wider context.

Plans Being Prepared For Pakistan Steel Mill

The Pakistan Industrial Development Corporation has engaged the services of the Koppers Company, Inc., of Pittsburgh, Pennsylvania to prepare a blueprint for the corporation's proposed steel plant, fabricating, and re-rolling mills. The consultant's main task is to advise the corporation on ways and means of mining the 60,000,000 tons of hitherto inaccessible iron ore in Chitral, and of blast furnacing the ore with low-grade Baluchistan coal and oil by the "low temperature process." The consultant will also advise the corporation on the possibilities of using iron ore deposits in Chhagai (Baluchistan) and Abbottabad, as well as scrap and imported billets.

Marshall Owen of the Koppers Company is making the exploratory survey. During his tour of Pakistan, he is studying conditions and holding meetings with industrialists and miners. He will select the site for iron and steel mills, and is expected to submit his blueprint to the corporation shortly.

The mill was originally proposed in 1949 by a mission of steel experts from the United States. They estimated that the consumption of iron and steel in the country would rise to 260,000 tons within two years. Actually, the consumption has risen to 350,000 tons. The mission further anticipated a consumption of 29,000 tons of pig iron in 1970, while the consumption has already exceeded 40,000 tons a year. This steady increase in the use of iron and steel has made development of mineral resources a critical need.

Australia, Britain and U.S. Agree on Uranium

Agreement in principle has been reached on the full and early development of uranium deposits at Radium Hill in the northeast section of South Australia. The agreement is between the Australian Commonwealth and South Australian state governments and the Combined Development Agency of the United States Atomic Energy Commission which represents the British and United States governments.

Because uranium is vital to the defense plans of the Allied world, significant details of the plans have not been revealed. The agreement makes adequate provision, however, for the retention by Australia of sufficient uranium for use in the development of atomic power projects. It is generally agreed that these Australian atomic power projects are unlikely to become a practicable proposition for about another 10 years.

The head of the delegation from U. S. Atomic Energy Commission was Jesse C. Johnson. He named 1954 as the year in which Australia should begin production of uranium on an important and economic scale. He said development should be achieved without large contributions of capital from either the U.S. or Great Britain since Australia already possesses adequate resources and knowledge to undertake development of the Radium Hill field, but he said that American and British help would be available if needed.

Peru Modifies Franchise Of Mining Credit Bank

The Peruvian Congress has passed an important bill modifying the franchise of the National Mining Credit Bank so that it can offer small mining operators greater facilities for obtaining loans, and can carry out several projects which will aid the mining industry in general.

Besides offering the small operators financial aid, the bank will carry on research and studies in many phases of the mining industry. Chief among the projects to be undertaken and financed by the bank will be that of installing hydroelectric generating plants in promising mining centers.

Studies have already been completed for installing a large power plant in the Huarochiri area; the bank also plans to survey Sitio, Chilete, Mico, and other areas for installation of similar plants. Under the new policy, the bank will now have a working and reserve capital of 200,000,000 soles.

Will Sink Two Shafts In Developing Swedish Ore

Zinc, lead, and iron ore have been found on Uto Island, one of the most popular summer resorts about 40 miles east of Stockholm, Sweden. Further prospecting will be carried out by the AB Jarnmalm, a subsidiary of the Stallbergs Gruvbolag.

The zinc and lead deposits, which also contain lithium and other valuable minerals, will be mined first through a shaft to be sunk to a depth of 50 meters. The iron ore deposits are larger, extending to a depth of 1,000 meters. To develop this ore, a shaft will be sunk 450 meters. Iron ore mining on the island dates way back. Until 1878 when mining was discontinued at Uto, about 3,000,000 tons of iron ore were produced.

Further north, experimental mining is also being carried out in the old Holmgruvan mine at Garpenberg. The ore deposit, said to contain manganese and iron, extends under a lake which has to be partially drained. The Fagersta Bruk and the Sandvikens Jernverk own the deposit, with estimated reserves to provide full-scale mining for 50 years.

RFC Buys Bolivian Tin-in-Concentrates

The Reconstruction Finance Corporation has agreed to buy considerable tonnages of Bolivian tin-in-concentrates from the Hochschild group and Aramayo Mines. The material, now stored in South American warehouses will be purchased for $1.17½ f.o.b. Chilean ports. While no tonnages have been mentioned, the total is estimated to be about 10,000 tons. The sale does not involve delivery of tin concentrates to be mined in the future.

Completion of Australian Al plant to Be Hastened

Australia's federal government has decided to spend an additional £A4,000,000 to speed the completion of the aluminum plant at Bell Bay in Tasmania. Original plans called for completion of the structure in 1954. In view of the importance of aluminum ingot production to Australian defense, the government is rushing the plant into operation as soon as possible. It is reported that at least a million tons of bauxite has been proven in Victoria and could easily supply Bell Bay, while other deposits have been reported in the ten-square mile area of Arnhem Land in northern Australia.

New Sulphuric Acid Plant For English Chemical Firm

A $5,600,000 plant to manufacture sulphuric acid from anhydrite is being built by Solway Chemicals, Ltd., a subsidiary of Marchon Products, on a site adjacent to the present Marchon plant at Whitehaven in Cumberland, England.

The new plant is expected to produce 75,000 tons of sulphuric acid starting in 1954; later, it is hoped to double the production. Cement and cement clinkers, byproducts of the process, will also be produced in about the same quantity.

The anhydrite deposits, to be mined by means of two surface drifts, lay under the St. Bees Headland adjacent to the site. Borings have proved the existence of two thick seams which are expected to cover the requirements of the group for 50 years. If further borings confirm the belief that larger deposits exist, the plant will be expanded accordingly.

The project has been financed largely by the government-sponsored Industrial and Commercial Finance Corporation, and the loan capital has been provided by the government. A. C. Halfpenny, technical director of Marchon Products, is in charge of the project; A. E. Leek will be general manager; Andrew Millar, a West Cumberland mining man, and Dr. H. H. Kuehne, former managing director of I. G. Farben and co-inventor of the process, will serve as consultants.

TANGANYIKA—Official mineral export figures indicate that the *Williamson* diamond mine at Mwadui began to export diamonds again in February of this year. The mine had stopped exporting in June 1950 over a dispute with Oppenheimer's *Diamond Sales Corporation*. Diamond exports for February totaled £224,500. The previous month's total—all from *Alamasi* mine, the territory's only other diamond producer—was only £11,000.

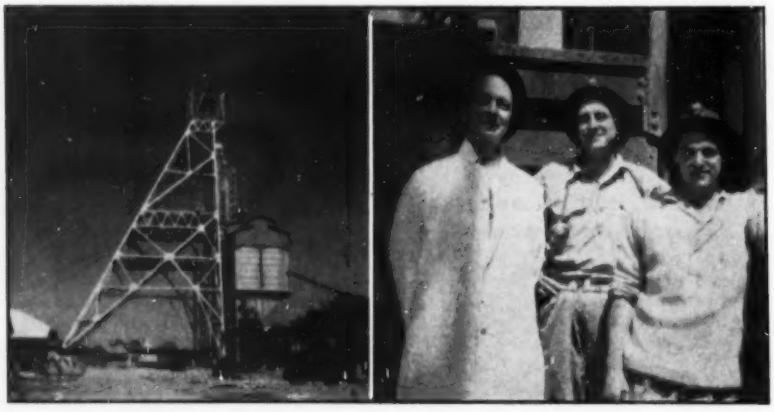
BELGIAN CONGO—*Union Miniere du Haut Katanga* is investigating the recovery of certain amounts of germanium from smelter dusts. It is believed that germanium could be recovered mainly from zinc ores. In the first quarter of this year, Katanga exported nearly 50,000 metric tons of zinc concentrates, as against nearly 35,000 tons in the same period of last year.

NIGERIA—*Amalgamated Tin Mines* has installed a new type of plant for excavating overburden on its mining properties in the Plateau province of Nigeria. Excavations of similar areas have usually been made with dragline excavators or mechanical shovels. Nine Euclid, 20-ton, 150-hp., bottom-dump wagons and a Euclid loader drawn by a 175-hp. tractor are used in this new method. When the staff becomes more proficient, it will be possible to remove the overburden at an average rate of 550 to 650 cubic yards an hour. In about three months, an area of tin-bearing wash 650 feet by 146 feet by 42 feet deep had been exposed. The Euclid loader's cutter has vertical and horizontal edges. The cut can be adjusted to up to 24 inches deep and between 30 and 60 inches wide. The loader is drawn by a tractor at between 3 to 4 miles per hour. A belt elevator carries and raises the spoil continuously to a position at the rear of the loader. The top of the elevator overhangs the side of the loader high enough to allow a bottom-dump wagon to pull in underneath for loading from the conveyor.

GOLD COAST—The quarterly report from *Bibiani, Ltd.* shows that 89,500 tons were crushed in three months, yielding 18,044 ounces of fine gold compared with 88,000 tons yielding 18,647 ounces in the same period of last year. The Central shaft has been sunk below No. 17 level and No. 17 station has been extended. An electric crane for the new Bandshaw shed has been put into service. The report of R. M. Park, consulting engineer, forecasts extensive work this year developing the south ore body on the West Reef below No. 12 level. It is planned to extend the central shaft below No. 18 level so that the skip hoisting equipment can be used for disposing of waste of development in depth.

ORANGE FREE STATE—The Government Mining Engineers and the companies operating in the Free State have agreed upon certain safety measures which will apply to all of the gold mines in that area. The measures eliminate the use of "cheesa stick" which will be replaced by electric detonation, with some exemptions permitted. The use of fuses in stope mining will be continued, because the accumulation of methane gases in explosive quantities is not considered likely. Preventive measures include the prohibition of open lamps, of smoking, or even of carrying cigarettes, pipes tobacco, or matches underground, except by authorized persons. It will continue to be the responsibility of mine managers to enforce certain essential safety measures, and subject to these, existing equipment can still be used. These measures include testing at the beginning of each shift by safety lamp of the area or areas in which underground equipment is used, seeing that ventilation is adequate, and, where it is not adequate, the direction of air-jets on to apparatus not flame- or explosive-proof.

NORTHERN RHODESIA—Upon the completion of the current sales contract,



ROAN ANTELOPE'S IRWIN SHAFT

The new Irwin shaft of the Roan Antelope Copper Mines Limited at Luanshya, Northern Rhodesia, is shown at the left. First ore from the shaft was hoisted on September 24, 1951. The shaft is named after D. D. Irwin, a director of the company, and is four miles northwest of the concentrator. Ore is transported from the shaft to the mill by company railroad. At the right, ready to go underground at the new shaft, are J. H. Sinclair (left), underground manager; F. Jurelic (center), mine captain in charge of shaft sinking; and a member of the mine crew.

the *Rhodesia Broken Hill Development Company, Ltd.* will discontinue production of fused vanadic oxide. A decision regarding future production will be made after results are obtained from the experimental work now going on in the treatment of mixed fine tailings. On the basis of recent investigations, it has been decided to produce refined cadmium. The design of the necessary plant is now being planned.

SOUTH AFRICA—The *Ellaton Company* has purchased the mineral rights of 1,230 morgen in the Klerksdorp district, after diamond drilling and some underground exploration of the property. To finance operations, £2,500,000 was borrowed from the *Anglo American Corporation* at 5½ percent interest. This amount is estimated as sufficient to bring the mine into production at a milling rate of 30,000 tons per month. An additional loan has been arranged for housing purposes. Shareholding companies will be *Anglo American, Strathmore Exploration* and associated companies, and *Anglo Transvaal Consolidated*. A five-compartment vertical main hoisting shaft is in process of being sunk to 1,400 feet.

GOLD COAST—Major General Sir Edward Spears, chairman of the *Ashanti Goldfields Corporation, Ltd.*, reports that the sinking of the important Eaton-Turner shaft is now going well, after initial difficulties, and has reached a depth of 160 feet. He expects the large permanent winding engine and its auxiliary equipment to be installed and ready for use in a year.

BELGIAN CONGO—More electric power for the mines of the Belgian Congo will be provided within the next few years. A new hydro-electric plant at Nzilo, called the *Delcommune* power station, is expected to be providing about 500,000,000 kilowatts per annum some time in 1953, and of even greater importance is another plant reported to be planned for construction just below the Delcommune. This will be called the *El Marinel* and is expected to supply 1,000,000,000 kilowatts a year, starting in 1957. *Union Miniere du Haut-Katanga*, largest enterprise of all in the Congo, can be expected to expand its mining activities with so much power at its disposal.

SOUTH AFRICA—*Western Reefs Exploration and Development Company, Ltd.* expects that its Sub-Vertical shaft will reach its final depth by the middle of this year. Installation of the ventilation wall and of the shaft-loading equipment is expected to be completed by the end of the year, with development work on the Vaal Reef horizon scheduled to start early in 1953. Orders have been placed for an additional gold recovery plant estimated to cost £50,000.

SOUTHERN RHODESIA—The additional revenue received by Southern Rhodesia's gold producers since they obtained permission to sell 17,000 ounces a month on the free market does not counteract the rise in working costs for the industry. Since 1939, the cost of mining stores has risen 85.8 percent, the increase of 16.8 percent during 1951 being the highest annual increase yet felt. There are now 610 operating mines in Southern Rhodesia, 424 of which are gold producers. There has been a marked improvement in the supply of native labor. However, three of the larger gold mines have introduced seven underground locomotives, resulting in a saving of 114 natives. It is felt that the general use of small locomotives underground will help to ease the ever-present native labor problem.

KENYA—A newcomer in the mineral field of Kenya is carbon dioxide natural gas marketed by Carbacid Manufacturing Company. During the past year, the production of natural carbon dioxide from a bore-hole at Esageri was started on a commercial scale by Carbacid, who has a Special Mining Lease over the bore-hole for 21 years. Supply is expected to be ample for many years.

EGYPT—A large-scale survey has been made of the iron deposits in Aswan Province of Upper Egypt and plans for mining are now moving ahead. A steel plant may also be erected in Aswan.

BELGIAN CONGO—Production of gold at the *Kilo-Moto mines*, operated by the *Societe des Mines d'Or*, reached 1,248 pounds during March, compared with 1,246 pounds in February. The average for the first three months of the current year stood at 3,774 pounds, against 3,220 pounds for the same period in 1950.

INTERNATIONAL

EUROPE

SWEDEN—By the end of February, Sweden had already sold her entire iron ore output for 1952. The prices paid for export ore were on the average of 34.16 krone per ton in 1951, as compared with 30.57 in 1950 and 26.56 in 1949. Thus, the prices increased by 15 percent in 1950 and 12 percent in 1951. The 1952 increase is not yet known.

YUGOSLAVIA—Discovery of chromium deposits in southwestern Serbia is reported, with an estimated yield of 500,000 tons of metal. When added to the reserves already on hand, Yugoslavia's chromium reserves are now estimated at 1,500,000 tons.

ITALY—A modern electrolysis plant at Nossa in the Alps has recently been placed in operation, increasing Italy's zinc production capacity. Four such plants are now extracting zinc from zinc ore with a total refining capacity of 140,000 tons of ore, yielding about 70,000 tons of pure zinc. In 1951, ore production totaled 215,000 tons, of which 75,000 tons were exported mainly to Germany, Belgium, and France.

ENGLAND—A newly formed company, *Western Metallurgical Industries, Ltd.*, hopes to recover 100,000 tons of iron during the next twenty years, as well as large quantities of zinc and lead, from huge dumps left by smelter works on the outskirts of Swansea, Wales. The firm is erecting a huge rotary kiln and other equipment purchased in Belgium. About 200 men will be employed to treat 1,500,000 tons of slag, recovering 5,000 tons of iron per year. With the leveling of the mountain of slag, sites will be cleared for new industries.

ALBANIA—With the completion of the 1951-1955 Five Year Plan, production from the mines is expected to be three times greater. The output of coal, purified bitumen, copper, chromium, and crude niter will be particularly increased. Great attention is being given to geological surveys to locate these minerals and others.

EAST GERMANY—A zinc smelting and refining plant now under construction near Freiberg is expected to be in operation by 1954. The plant will treat local ore.

SPAIN—A new blast furnace is in operation at the *Moreda* plant of the *Santa Barbara* company. The new stack has a daily capacity of 180 tons.

FRANCE—Three steel plants have closed within recent months because of financial difficulties—the *Acieries du Nord* at Maubuege, at Duzies, and at l'Orne near Lyons. Two at Haumont and Cannes-La-Bocca had previously closed.

NORWAY—Production from the *Sydvaranger* iron ore mines at Kirkenes in northern Norway has been started and output is the rate of 1,000 tons per day. The year's total of 500,000 tons has already been sold to Great Britain, Western Germany, and Belgium.

SWEDEN—Sweden's annual requirements of elemental sulphur are estimated at 75,000 to 80,000 metric tons. From 16,000 to 17,000 tons are obtained from the *Swedish Shale Oil Company* at Orebro, the only domestic producer. Annual output of sulphur from the company's plant at Kvarnstorp is expected to reach 28,000 tons by the end of 1953. Installations for the recovery of the material as a by-product in the production of shale oil are to be expanded.

CZECHOSLOVAKIA—Two new open hearth furnaces have been placed in operation at the new *Klement Gottwald Works* near Ostrava. Other furnaces are under construction and will be put into service shortly.

ITALY—During the first quarter of 1952, Italy exported 224 tons of quicksilver, against 124 tons during the same period last year.

ASIA

MALAYA—A serious decline in the production of tin is forecast by the acting president of the Federated Malay States Chamber of Mines, D. T. Waring. He reports that peak production has already been reached, and that the virtual absence of all prospecting in the country

since 1930 will probably lead to a serious decline in output. Plants are expected to become idle as reserves are exhausted, unless prospecting can be resumed. Mr. Waring also pointed out the need for adjustments in the export duty on tin so that companies will be able to afford the capital outlay for higher capacity equipment necessary to work low-grade deposits in new areas.

PAKISTAN—The Advisory Committee on Mines and Minerals, at a recent meeting of industrialists and mine owners, appointed a special group to investigate the possibility of setting up a chrome ore concentration and refining plant. It was reported that a large quantity of chrome ore of inferior grade is available in Baluchistan. It was mined along with higher grade chrome ore, but was left at the pits or loading stations where better ore was selected for export. With proper refining and concentration, it is believed that the chrome content could be improved from 45 to 50 percent. The committee also noted that experiments with regard to the refining of sulphur had succeeded on a laboratory scale. A pilot plant on a semi-commercial scale has been set up at Lahore but about six months will be needed to collect reliable data before the question of setting up a commercial plant for refining Ko-i-Sultan sulphur can be decided.

CEYLON—Russia has offered to supply Ceylon with much-needed sulphur in order to fight the rubber plant disease. Competent circles state that it is unlikely that the government or the planters will accept the offer and efforts are being made to obtain supplies from Belgium, Spain, and Portugal. Ceylon's main source of sulphur was the United States but the U.S. has stopped supplies as a reprisal against Ceylon for sending rubber to Communist China.

TURKEY—A second blast furnace has been completed at the *Karabuk* iron works and the plant will soon be working at capacity level because of this addition. The output of iron ore from the *Divigri* mines will be stepped up to meet Karabuk's expansion program, and new installations will be set up in the *Zonguldak* coal field to increase the output of top-grade coal for Karabuk.

ISRAEL—An agreement has been signed by the Israeli Government and the Belgian *Sociate Belgo-Continentale des Minerais et Metaux* for the development of copper deposits at Negev. The Sociate will send engineers and geologists to assist in technical planning and in the purchase of equipment. The Israeli government will supply the initial investment of $1,500,000 for equipment. It is expected that within a year to eighteen months the copper plant north of Eleath will yield over ten tons of copper per day. Since transportation is one of the main difficulties, a road from Eleath to Negev will be constructed. Several recent discoveries of copper deposits have led to this exploitation program.

MALAYA—Statistics from the Chief Inspector of Mines in Malaya show that tin produced in the territory during the first three months of 1952 totaled 13,904 metric tons. Breaking this figure down into the totals by different mining methods reveals some interesting information: by dredging, 7,548 metric tons; by gravel pumping, 4,989; by hydraulicing, 378; by dulang washers, 212; by open cast, 171; and miscellaneous methods, 28. European-owned mines produced 8,850 tons (63.7 percent) while Chinese mines produced 5,054 tons (36.3 percent). According to E. M Ferguson, chairman of the *Straits Trading Company*, tin output from Malaya in 1951 remained remarkably steady. However, there had been a significant decline in output from Chinese-controlled mines since 1950, a tendency which is continuing into 1952. Mr. Ferguson said that mines in the Eastern States of Trengganu and Kelantan had been ordered for security reasons to shut down, and output from Johore, had dropped off for the same reason. Only one dredge is reported to be operating there.

TURKEY—A new company has been formed to increase Turkey's quicksilver output over the present rate of 1,000 kilograms of 98-99 percent quicksilver per year. Deposits near Konya in Central Asia Minor will be mined more extensively. The price to be charged has caused some trouble. Quicksilver was recently sent to Austria from Turkey at a price of $5.30 per kilogram. The Turkish government has set the minimum export price at $7.00 to $7.50 f.o.b. Istanbul, despite the Spanish offer of 100 percent quicksilver at $6.50 per kilogram.

BRITISH BORNEO—The three territories of North Borneo, Brunei, and Sarawak, which comprise British Borneo, are experiencing increased mineral activity. Bauxite deposits are being prospected by the *British Aluminium Company, Ltd.* Fourteen occurrences have been found, two of which may be ore grade. At Silimpon, 1,000,000 tons of good quality coal are estimated to be present, while gold, antimony, and mercury are believed to occur near Bau in Sarawak and are under investigation. These minerals were mined in this area before the war. Mineral output of British Borneo was valued at £24,000,000 in 1950, with oil as the chief product.

INDIA—The *Mercury Traders' Association* has suggested to the Indian government that it sell some of its mercury to the United States for much-needed dollars. India's mercury reserve is estimated at 3,000,000 pounds valued at 10,000,000 rupees. With a normal consumption of less than 300,000 pounds a year, the association points out that India will not need more than a sixth of present stocks and can afford to sell the mercury to the United States at prices much lower than those being paid by the U. S. to Italy and Spain. India imported the mercury mainly from Italy and Spain.

MALAYA—A sample of the difficulties under which Malayan tin mines have been operating in recent years is shown by the fact that by the end of 1951 Communist guerrillas had damaged or destroyed 87 oil engines, 11 pipe lines, 12 excavators and draglines, 2 turbines, 1 substation and 10 power pylons, 68 engine sheds, 2 tin sheds, and 1 pumping station.

CEYLON—The administrative report of the Government Mineralogist, recently released, throws light on deposits of kaolin, thorianite, monazite, glass sands, and iron ores in the island. The mica industry has closed down generally because of the end of the mica purchase scheme. Between 5,000,000 and 6,000,000 tons of iron ore occurs in scattered deposits, mainly in the southwestern part of the island. Only about 2,000,000 tons are considered practical for commercial development. The ore occurs mostly on the surface in the form of boulders or nodules.

INDIA—The Ministry of Works, Production and Supply Government of India is said to be considering the installation of a pig iron plant with a capacity of 3,500,000 tons of pig iron per year to meet the demands of the rapidly expanding engineering industry in the country. This production will be over and above the increased production to be undertaken by *Tata Iron & Steel Company* and the *Steel Corporation of Bengal* with the help of the government. The total cost of the project is estimated to be 15 crores of rupees, of which provision has already been made in the 1952-53 budget for 1.75 crores of rupees.

QUEENSLAND—*Mount Morgan Mines Ltd.* has offered to sell up to 150,000 tons of iron pyrite a year, at $6.72 a ton, if the Australian government decides to finance the establishment of a

sulphate ammonia plant. It has been proposed that the government should spend $17,920,000 on the plant, to produce 100,000 tons of fertilizer annually. To provide pyrite Mount Morgan might have to spend $224,000, according to the chairman, J. Malcolm Newman. The company would also provide the technical staff to manage the plant. Mount Morgan has 3,000,000 tons of pyrite in dumps, and also produces 40,000 to 50,000 tons from its annual metal production. It is estimated that demand might equal 200,000 tons a year.

PHILIPPINE ISLANDS—Up to May of this year, 16,133 tons of ore were milled by the *Baguio Gold Mining Company*, with the mill heads assaying an average of 0.42 ounces of gold per ton and a 94 percent gold recovery. Baguio's mine and mill were rehabilitated after destruction by the Japanese occupation, and placed in operation last December. The mill is now running at full capacity with some two years of reserve ore estimated to be on hand. General Superintendent is Frank E. Delahunty.

VICTORIA—*Victorian Antimony Mines Ltd.* is consolidating the *Costerfield, Minerva, Bombay, Alison, New Alison,* and *South Costerfield* mines which in the past have produced 55,000 to 60,000 tons of antimony and a large quantity of gold valued at more than £1,000,000. Only the South Costerfield mine is operating at present, but directors intend to unwater the main 1,000-foot Costerfield shaft and to develop the main reefs on the field. The Alison and Bombay are also reported to contain payable ore. Installation of a specially designed plant to recover antimony and gold is expected to be completed on the site within six months, at a cost of £15,000.

NEW GUINEA—A group of mining students from the Delft University of Holland will conduct an exploration program in New Guinea this summer on behalf of the Dutch government. They will explore the Cyclops Mountain for cobalt, nickel, and chromium ores. The program will last about six months, during which time the students will also gain necessary tropical experience in the field.

PHILIPPINE ISLANDS—Due to the stimulus offered by the premium "black market" prices paid locally for gold, the Philippines increased its gold production last year to $13,830,000 from $11,690,000 in 1950, which places it among the ten leading producers of the precious metal. It is also the largest gold producer in Asia. The mines are required to sell 25 percent of the gold to the government at the current official price, but may sell the balance to local buyers (mostly Chinese) who are said to smuggle it to China where it commands higher prices.

INDONESIA—The Mining Department has proposed that the government appoint 102 foreign experts to its staff, among them 57 geologists and 27 mining engineers. Large-scale operations are planned for a copper mine in Tirtomojo, 30 kilometers from Wonogiri in Java. The local authorities have requested a government loan of 1,000,000 Rupia. Copper content of the ore is reported to be six percent. An American firm in Djakarta, *N. V. Prana*, has offered to deliver the necessary machinery and know-how.

AUSTRALIA—Uranium from the *Radium Hill* field is expected to earn $5,000,000 for Australia in the first year of full-scale operations. The Atomic Energy Commission's Combined Development Agency will pay more than $4.00 per pound for the uranium oxide output of the proposed Port Pirie treatment works. American plant and know-how will be provided under the agreement which the Commonwealth and South Australian governments recently made with the Combined Development Agency. The ore bought by the agency will be shared between Great Britain and the United States.

INDONESIA—Present total production of Indonesia's major tin producing islands—Bangka, Billiton, and Singkep—is about 30,000 tons a year. Peak production was in 1941 when the mines produced 50,000 tons. In April, 1952 tin concentrates and slag shipped amounted to 3,419 long tons, the largest since December 1950 when the total was 3,602 tons. Of the April shipments, 1,260 tons went to the United States and 2,159 tons went to Holland.

PHILIPPINE ISLANDS—During the first quarter of the year, the mine management of the *Atok Big Wedge Mining Company* was reorganized. Production for the first two months of the year dropped to 25,868 tons with a gold value of Pesos 377,434. Subsequently production increased with 13,546 tons valued at Pesos 300,078 during March. Total quarterly production of 39,414 tons, valued at Pesos 677,512, is based on gold at Pesos 70.00 or $35.00 per ounce. As the current price of gold in the open market is Pesos 108 per ounce, the actual value of the quarterly production is considerably higher than the amount indicated above.

NEW SOUTH WALES—The new mill at *New Broken Hill Consolidated* is now in operation. Previously, the company had used the *Zinc Corporation's* mill to treat its ore. These are associated companies and operate adjoining leases. K. Parsons is mill superintendent at New Broken Hill Consolidated.

WESTERN AUSTRALIA — *Paringa Mining & Experimental Company Ltd.* is switching its interest from gold to base metals. The company's gold mine has ceased production and an option on the *Wheel of Fortune Extended* lead mine has been acquired. This mine, located at Northampton, is milling 600 tons of ore a month and producing 100 tons per month of lead concentrates.

TASMANIA—Tungsten strikes are reported from the southern west coast in the Interview River region. *Austral Malay Tin Ltd.* has taken an option over a tungsten and tin mine at Moina owned by the *Moina Tungsten-Tin Syndicate.* This mine, known as the *Sheppard & Murphy* mine, is an old-time tin mine which closed down when tungsten had little value and tin prices were low. Old reports show a tin-to-tungsten ratio of 5-to-3, and ore reserves "satisfactory." Later development work shows the grade to have been maintained in ore already broken. A separate company will be formed to operate the mine if development warrants it.

PHILIPPINE ISLANDS—*IXL Mining Company,* still inactive in mine operations pending outcome of war damage claims and development of ore, was able to reduce its deficit account by $32,435 during 1951. The company sold its preferred shares in *San Miguel Brewery, Inc.* during the year and reinvested the proceeds in San Miguel common stock, of which IXL now owns 22,243 shares. The company also holds a 14 percent interest in *Anta-M-IXL Selection Trust, Ltd. of Hong Kong,* which realized a profit of $121,446 last year. Most of this profit was from a dividend on its investment in *New Saza Mines* in Tanganyika, which had a profit of $74,762. At the end of last year, IXL's total assets were $736,366.

NEW SOUTH WALES—Officials of the Australian Bureau of Mineral Resources say a deposit of scheelite near Rye Park may prove to be the biggest discovery of its kind since the one on King Island in Bass Strait. Investigations begun last year with the help of the New South Wales geologists have revealed that the deposit is more extensive than originally believed. Drilling is continuing to establish the full extent of the deposit. Experts estimate that the main layer may yield 100,000 tons of tungsten ore of economic grade. Tests show a higher grade of ore than that at King Island.

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QUEBEC—Drilling has shown that *Anacon Lead Mines'* ore body extends 500 feet into the property of *United Lead & Zinc Mines*. Lead, zinc and silver values in the most northerly section of holes drilled are reported to have been excellent and could double reserves if they continue. About 1,000 feet are open to the north before the boundary of *Montauban Mines* is reached and the ore is expected to continue into this property. United Lead and Montauban operate a joint shaft which has reached a depth of 330 feet with levels established at 150, 185, and 245 feet. In view of the indicated extension of Anacon's ore body, there is to be an immediate deepening of the shaft. Production at the new 500-ton joint mill probably will be postponed until October to permit this additional drilling. Two more drill holes have been ordered to the property.

ONTARIO—*Quebec Metallurgical Industries Limited*, a subsidiary of *Ventures Limited* and *Frobisher Mining Corporation*, has completed negotiations with the *Cobalt Chemical and Refinery Company Ltd.* for construction of a smelter at Cobalt, Ontario. The smelter will cost some $2,000,000 and will produce cobalt, silver, and nickel metals, and copper residues. Cobalt Chemical and Refinery has been reorganized as *Cobalt Chemicals Ltd.* Quebec Metallurgical Industries will take over technical direction and management of the new plant under a ten-year contract.

NEWFOUNDLAND—The *Newfoundland Labrabor Development Corporation* has announced the discovery of a "promising" titanium deposit in the Mealy Mountains area of Labrador. A magnotometer survey of the area is to be made immediately by the *Photographic Survey Corporation* of Toronto.

QUEBEC—The *Merrill Island Mining Corporation* is sinking a shaft on its Chibougamau property to a depth of 350 feet to develop the east and southeast ore zones.

ALASKA—Among those returning to their mining camps for the summer season are: Mr. and Mrs. Martin Sathers, Sr. and their son Paul to their property at Fairbanks Creek; Val Anderson to the Flat area; Mr. and Mrs. Albin Martin to Little Minook Creek; John Wiehl who will mine with Archie Pringle, owner of the Rhode Island mine near Hot Springs; Mr. and Mrs. Toivo Rosander to Ophir; Pat Savage to Flat Creek; Alex Mathieson, owner of the North American Dredging Company to Flat Creek; and Charles Lazeration who returns to his Cleary Summit quartz property with partner Vern Jokela.

BRITISH COLUMBIA—*Bralorne Mines Ltd.* will assist *Gray Rock Mining Company* in the development of Gray Rock's 20-claim prospect on Truax Creek in the Bridge River district of British Columbia. Bralorne engineers will direct the development program. Immediate plans call for the driving of a 1,000-foot crosscut some 300 feet vertically below the No. 1 level to explore the downward continuation of the No. 1 vein. The Gray Rock mine, an antimony-silver prospect, was acquired from *Bellore Mines Ltd.* several years ago.

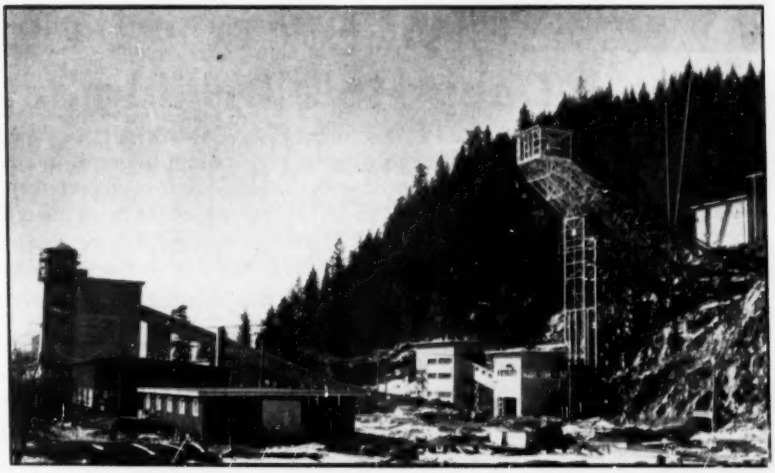
MONTANA—*Minerals Engineering Company* of Colorado is installing facilities at Lost Creek, 46 miles south of Butte, Montana, which will aid in the development of tungsten deposits. A DMEA contract has been signed which calls for the expenditure of $111,280 to drive two tunnels under surface outcrops. The ore zinc is a portion of the newly discovered tungsten ore belt extending southward from Brown's Lake.

SASKATCHEWAN—*Tazin Mines Ltd.* has begun to explore its Donaldson Lake property in the Lake Athabaska area. The property adjoins north of what was formerly the *Raggs Lake* group of *Baska Uranium Mines Limited*, at the east end of *Eldorado Mining and Refining Company* ground. The south corner touches Eldorado.

MANITOBA—Diamond drilling is in progress on the 20-claim property of Northern Tungsten Ltd. at Snow Lake. A mill is in operation and three years of ore reserves are estimated to be on hand. The claims were formerly held by *Leedoro Snow Lake Mines*.

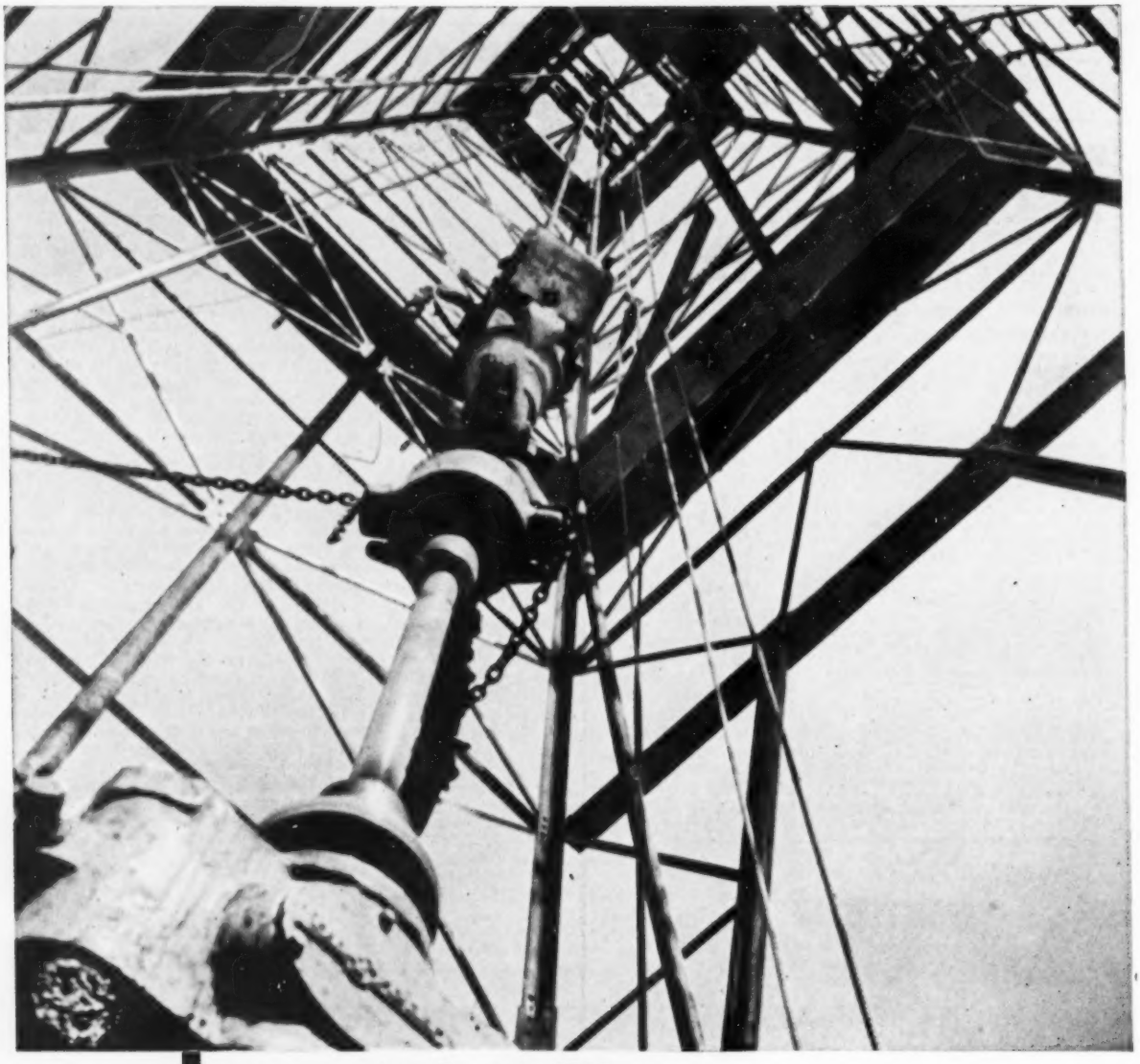
QUEBEC—The *Dominion Silica Corporation's* new processing plant will go into production early this month. The plant, located on the Island of Montreal at Lachine, will produce a wide range of high-grade silica products, including glass sand, foundry sand, silicon carbide sand (used in the manufacture of abrasives), silica flour (an ingredient in the production of building materials), and insoluble poultry grits for use as a poultry feed supplement. It is hoped that the Lachine plant will be able to supply the silica requirements of eastern Canada. President of Dominion Silica is John C. Udd of Montreal who is also president of Sheraton Hotels Ltd.

ALASKA—Operations of the *Zenda Mining Company* are under way at Tin City. The *Deadwood Mining Company* has leased the Independence Creek min-



COMINCO'S NEW 500-TON CONCENTRATOR

The Consolidated Mining and Smelting Company's new 500-ton concentrator is now in operation at the company's Bluebell mine, a lead zinc project at Riondel, British Columbia. Shown above are a warehouse and machine shop (left) and the hoist house and partially completed headframe (right). The crushing plant is at the base of the headframe, while the conveyor gallery leads to the new concentrator. The operation cost an estimated $3,000,000 to bring into production.



Deep Hole Drilling . . .

with speed and economy is provided by Longyear Contract Drilling Service. Rapid drilling progress is obtained by modern equipment like this new Longyear deep hole drill. Maximum core recovery is assured by skilled Longyear crews experienced in recovering cores from all types of formations.

Whatever your drilling needs—deep hole or shallow with a "turn-key" job—Longyear Contract Drilling Service will satisfy them quickly and economically.

Write today for complete information without obligation.

* * * * *

The Longyear DH-5 deep hole drilling rig is now available to purchasers who prefer to do their own drilling. Write for New Bulletin.

. . . Cores Tell The Story

E. J. LONGYEAR COMPANY

1700 FOSHAY TOWER — MINNEAPOLIS, MINNESOTA, U. S. A.

CANADIAN LONGYEAR, LIMITED, NORTH BAY, ONTARIO, CANADA

DIAMOND CORE DRILLS • CONTRACT CORE DRILLING
SHAFT SINKING • GEOLOGICAL INVESTIGATIONS

REPRESENTATIVES IN PRINCIPAL MINING CENTERS IN THE UNITED STATES AND OTHER COUNTRIES

ing property owned by A. A. Zimmerman. Heavy equipment will be moved from Deadwood Creek to the Independence for the season's operations. The *Hunter Creek Mining Company* has resumed work in the Rampart vicinity, while the *Northern Tin Company's* camp at Cape Prince of Wales is in operation. The *C. J. Berry* dredge on Mammoth Creek in the Circle district will also operate this season. Harold Christensen is superintendent. The *Alluvial Gold Placers* will operate the Woodchopper Creek dredge this season, and will conduct stripping operations on nearby Coal Creek.

ALASKA—With the winter season over, many of the old-time miners are returning to their claims to prepare for the summer placering season. Among them are H. F. Wanamaker who operates the Wiseman area; George Woldhelm who mines in the Norton Sound area; and John Miscovich who operates in the Poorman region, along with his brothers, Howard and Andrew.

QUEBEC—The *Montgomery Mining Company Limited* has entered the field of gold mining in Quebec. The company's mining claims total 400 acres and are all situated in the south section of the Chibougamau mining field of Quebec. Contract for a pattern-drilling program has been signed for a minimum of 10,000 feet. A small crew is already at work on surface exploration.

NORTHWEST TERRITORIES—It is reported that the *Consolidated Mining and Smelting Company* has arranged for construction of a road through the bush to an extensive lead-zinc area at Pine Point on the south shore of Great Silver Lake. Cost of the road is between $50,000 and $70,000. It would run from a point near Hay River in Northwest Territories, across the border of Alberta to Pine Point. Work is scheduled for the summer.

SASKATCHEWAN—*Nesbit LaBine Uranium Mines* has been securing excellent results in its current program of underground development. Mine Manager Emil Walli reports a new showing of pitchblende, the fourth so far, and considered to be the most important. Over two inches of "solid pitchblende" has been encountered in the 150-foot level crosscut. Exploration has continued on to Eagle Lake fault.

QUEBEC—*Anthonian Mining Corporation Ltd.* is the new name for *Anacon Extension* decided upon at a special meeting of shareholders. In addition to its original property in Montauban, Quebec, the company has purchased Adam's Island and Simpson's Island on the Bay of Fundy, along the northern shore of New Brunswick and a property of 400 acres in the South Chibougamau area of Quebec. Drilling is already under way on Adam's Island and will be started shortly on the Simpson's Island property.

QUEBEC—The *Lyndhurst Mining Company* of Duparquet, Quebec, reports that diamond drilling has outlined a considerable occurrence of copper ore on its property in this Northwestern Quebec mining area. This property extends 7½ miles along the strike of a favorable rhyolite-bearing band of rocks. Limited exploration has already indicated sufficient ore to warrant sinking of a shaft. A deeper series of holes has been started to test at greater depth the ore lenses which were drilled at the 100, 225, and 300-ft. horizons. Several potential outside areas are to be tested with a view to expansion.

ONTARIO—*Duvay Gold Mines Limited* announces that it has changed its name to *Duvex Oils and Mines Limited* with shares of Duvay Gold Mines exchangeable for shares of Duvex Oils and Mines Ltd. on the basis of one Duvex for each four shares of Duvay.

UNITED STATES—Thirty-seven iron ore mines and companies and 27 Michigan miners in the Lake Superior iron ore district have been awarded Certificates of Honor by the Joseph A. Holmes Safety Association for exceptional safety records in the minerals industry during the past year. Dr. Holmes was the first director of the U.S. Bureau of Mines. The organization was formed in 1916 to commemorate and further his work in promoting safety in the minerals industry.

ONTARIO—Base metals have been discovered in two wide zones on the property of *Rugged Red Lake Mines Limited* in northwest Ontario. In addition, a re-examination of diamond drill cores has revealed widespread disseminated scheelite. The two discoveries were made in a new survey of the property by the com-

pany's president, Colin A. Campbell. The Rugged Red Lake property was originally developed for gold, but Mr. Campbell, studying the general geology of the district, decided that the search had been directed for the wrong metal, and that it was likely that more important base metals values could be located. He re-prospected the property and made these new discoveries. Mr. Campbell reports that his company has been approached by a strong United States financial group, and that it is likely that an agreement will be reached by which this group will advance up to $165,000 for the first metal development program.

DUTCH GUIANA—The *International Bank for Reconstruction and Development* has recommended a $53,000,000 program to produce aluminum in Dutch Guiana. A special bank mission, headed by R. H. Demuth, director of technical assistance for the bank, went to Guiana last fall to investigate the bauxite and power reserves. The group reported that there was no technical reason why cheap hydroelectric power could not be generated locally in order to convert bauxite into aluminum, and urged the colonial government to seek public subscription and outside investments to develop this potentiality. Bauxite production has increased steadily during the last 13 years, and according to the mission a ten-year program could increase it to 3,000,000 tons a year.

MEXICO—Discovery of 19 rich tracts of iron ore at Pihuama, Jalisco, has been reported by Ing. Adrian Esteve, chief of the Industrial Investigations Office of the bank of Mexico. The tracts are in an area 216 kilometers square, and were found during inspection of Jalisco's manganese deposits.

BRAZIL—Work has started on a railway from the Macapa harbor to the manganese mines in the Amapa Territory. Construction of the railroad was one of the conditions of the development concession granted to the joint U.S.-Brazil corporation which is exploiting Amapa's mineral resources. The territory is also reported to be rich in iron, tin, chrome, and precious metals. Full-scale export of ore from the area expected to begin in 1953, when the railway is scheduled to be completed.

CUBA—A copper vein has been discovered in the Bacuranao area near Havana. Officials of the Department of Mines and Mountains say that samples which have been examined show the vein to be of real importance.

MEXICO—The Mining Chamber is campaigning for the building of local roads to serve more mining regions. They believe that new roads would benefit existing mines that are hampered by lack of adequate transportation and would also make many new mineral tracts more profitable for development which are presently too far away from roads and railroads. The *Cia. Minera Tejocotes, S.A.* in Oaxaca has asked the Labor Ministry for sanction to suspend operations. It explains that work is unprofitable because the National Railways fail to provide it with enough freight cars to move its ore to market. The Zacatecas chapter of the Small Scale Miners Union has asked President Aleman to order the building of a road between Concepcion del Oro and

Saltillo, Coahuila, to provide steady and reliable output for their ore. They explained that the Zacatecas & Coahuila Railway, the only transportation service in their region, can only handle 20 percent of their production because it lacks sufficient equipment.

ARGENTINA—Geologists have completed surveys of the *El Oro* gold mine in La Rioja province. Some lodes are said to have ore assaying between 16 and 29 grams per ton, with widths up to 65 centimeters. Until 1943, some work had been carried on by a Canadian firm. A 100-ton-per-day, amalgamation-flotation plant is located in the vicinity. Exploration work has also disclosed important gold deposits in the Agua Tapada and Culampaja districts of Catamarca province, and at Canada Honda in the San Luis province.

DUTCH GUIANA—*Purdy Mica Mines Limited* of Montreal, Canada, has optioned the *Suriname Gold Mines Limited* property in Dutch Guiana and it is now being examined.

NICARAGUA—Completion of a four-year expansion program at the property of *La Luz Mines, Ltd.* at Siuna, Nicaragua has revealed about 13 years of available ore for its 2,000-ton-daily capacity plant. Mine development has added another 617,931 tons of ore to the 869,300 tons already reported in the annual report as new because of work on the 750-foot level. The present shaft is being sunk an additional 500 feet in order to handle ore from the lower levels which cannot be handled through the existing crushing station and loading pocket. The *Rosita* copper property nearby will also be put into production soon.

JAMAICA—A first shipment of 11,000 tons of bauxite has been made by *Reynolds Jamaica Mines* to the United States. U. S. agencies have advanced considerable funds for development of this property and repayment is to be made in the form of shipments of aluminum to the U. S. stockpile.

BRAZIL—There are reports from Salvador in the state of Baia that samples of ore from Brumado in Baia have been examined in a local laboratory and have been found to contain high-grade scheelite.

MEXICO—Governor General Gonzalez Lugo has announced that Colima has iron reserves of 70,000,000 to 100,000,000 tons and that high hopes are entertained for the deposits of iron at El Mamey and Nuchitlan, 50 miles from Manzanillo, which is Colima's principal port. He revealed that Japanese industrialists are interested in acquiring large amounts of Colima iron and that some are already negotiating for a considerable supply. Colima expects to have much of her ore treated at the new plant the Federal Government is planning at Puerto Morales in Guerrero.

CHILE—In view of the rapid advances of atomic research being made by many nations—among these, certain Latin American nations—the Chilean government has issued secret instructions for intensifying the search for new uranium sources in Chile. Engineers from the United States and Chile have already confirmed the presence of this element in several parts of the northern sector of the country, and local and foreign laboratories have assayed samples of ore already obtained to determine the degree of radioactivity and the economic possibilities for exploiting the deposits.

ARGENTINA—Gold production is receiving increasing attention in Argentina, which should help to relieve the country's gold shortage. In the El Morado district of San Juan state, gold is mined from six veins. A recent study of this district reports gold ore reserves at 11,450 tons, averaging 20.8 grams a ton. In the Cerro Blanco district of San Juan where operations date way back, a geological survey of the *Caledonia* mine estimated ore reserves at 50,000 tons, assaying about 20 grams of gold per ton. In the Gualilan district a small cyanide plant is retreating cyanide tailing, and in Los Papagayos, a modern cyanide plant has a yearly capacity of 56 grams of gold.

BOLIVIA—The development of the mining industry in Bolivia is said to be hampered by the great percentage of foreign currency the mining companies are forced to sell to the government at the official rate of exchange—60 Bolivianos to the U. S. dollar. The free market rate is 200 Bolivianos per U. S. dollar and shows the actual buying power. In this way, the mining industry has to carry nearly the whole burden of providing the government with foreign currency. Increases in production and value do not lessen the government's desire for foreign currency. However, only recently the government published a new decree stipulating more favorable exchange conditions for the tungsten mines, when their combined production goes higher than 2,000 metric tons of WO_3 per year. Still, the facts do not seem to encourage development or new investments in mining. In 1951, for example, 33,664 metric tons of fine tin were produced, compared with 31,714 metric tons in 1950. The 1951 value in foreign currency for tin concentrates amounted to $62,637,933, compared with $30,196,000 in 1950. 90,766 metric tons of other nonferrous minerals were produced in 1951, valued at $10,946,801. In 1950, 62,740 metric tons were produced, valued at $8,816,000.

AMSCO dippers keep the heat on loading at 50° below zero

North Pole weather plus loading "pure rock" are no problems to Manganese steel dippers.

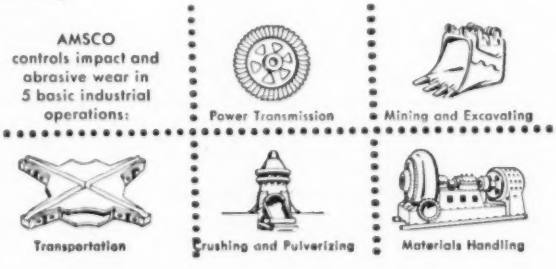
In June, 1948, an iron mine in the northwestern Adirondacks installed its first AMSCO dipper. It's still going strong—16 hours a day, 7 days a week! Old type dippers used previously lasted as little as one week. And the mining company had to employ four welders full time to keep them going.

In design, too, AMSCO dippers are made for the type of punishment low grade ore and low temperatures inflict. Except for tooth work, the only repair has been the replacement of the heel band after two-and-a-half years of this kind of vigorous operation.

Of course, not all mining and excavating operations are as tough as this one . . . but it's a good example of how to save money and manpower through the use of AMSCO products.

WHENEVER YOU MEET A PROBLEM OF WEAR CAUSED BY IMPACT AND/OR ABRASION . . .

. . . find out about longer-lasting, dollar saving AMSCO manganese steel . . . world's largest producer of Manganese Steel Castings for all industry.



Brake Shoe **AMERICAN MANGANESE STEEL DIVISION**

425 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que. Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

U.S. METAL & MINERAL MARKETS

METALS

JUNE 13, 1952

COPPER:	**Electrolytic.** Delivered F.o.b. cars, destination U.S.A.	24.50¢
	Lake. Delivered, destinations U.S.A.	24.625¢
	Foreign Copper. New York	Not Quoted
LEAD:	**Common Grade.** New York	15.00¢
ZINC:	**Prime Western.** East St. Louis	16.00¢
ALUMINUM:	**Primary 30 pound Ingots (99% plus).** F.o.b. shipping points	19.00¢
ANTIMONY:	**Bradley Mining Co.'s Elk Brand 99.5%.** F.o.b. Cascade, Idaho	39.00¢
	Lone Star Brand. F.o.b. Laredo, in bulk	39.50¢
BISMUTH:	(In ton lots) price per pound	$2.25
CADMIUM:	**Sticks and bars.** 1 to 5 ton lots (Price per pound)	2.25
COBALT:	**97-99%,** keg of 550 pounds (Price per pound)	$2.40
MAGNESIUM:	**Ingots (99.8%).** F.o.b. Freeport, Texas	24.50¢
MERCURY:	**Flasks.** Large lots, New York	$197.00
NICKEL:	**"F" Ingots (5 pounds).** F.o.b. refinery, Port Colburne, Ontario	56.50¢
TIN:	**Grade A Brands.** New York (Price per pound)	121.50¢
TITANIUM:	**(98.5%).** F.o.b. Beverly, Massachusetts	$7.00
GOLD:	United States Treasury price	$35.00 per ounce
SILVER:	**Newly mined domestic.** United States Treasury price	90⅓¢ per ounce
	Foreign. Handy & Harman	82.75¢ per ounce
PLATINUM:		$102.00 to $105.00 per ounce
	($105.00 price goes to $93.00 after July 27th.)	

ORES AND CONCENTRATES

BERYLLIUM ORE: 10 to 12% BeO. F.o.b. mine, Colorado ..... $36.00 per unit

CHROME ORE: F.o.b. railroad cars eastern seaports. Long tons dry weight.

African (Rhodesian). 48% Cr_2O_3.	$43.00-$44.00
African (Transvaal). 48% Cr_2O_3.	$34.00-$35.00
Turkish. 48% Cr_2O_3. 3 to 1 chrome-iron ratio	$53.00-$54.00

U. S. Government ore purchase depot Grants Pass, Oregon, Base price, lumpy ore, $115.00; fines and concentrates $110.00 for 48% Cr_2O_3 and a 3 to 1 chromium-iron ratio. Premiums for higher grade ore and for a ratio up to 3.5 to 1. Penalties for grades down to 42% Cr_2O_3.

IRON ORE: Lake Superior. Per gross ton Lower Lake Ports.

Mesabi, Non Bessemer, 51.5% Fe	$ 8.30
Mesabi, Bessemer, 51.5% Fe	$ 8.45
Old Range, Non Bessemer	$ 8.55
Old Range, Bessemer	$ 8.70

MANGANESE ORE:

Metallurgical grade. 46 to 48% Mn. Long ton unit	$115.00-$123.00
Chemical grade. 80% MnO_2. Per ton	$60.00
Chemical grade, domestic, 70% MnO_2, F.o.b. mines	$45.00

U. S. Government ore purchase depot Deming, New Mexico. Base price, $6.10 per long dry ton for 15% ore. Price increasing to $76.00 for 40% ore. Less $12.00 per long dry ton for milling. U. S. Government purchase depot Butte, Montana. Base price, $6.05 per long dry ton for 12% ore. Increasing to $40.42 for 30% ore. U. S. Government purchase depot Phillipsburg, Montana. Base price, $6.43 per long dry ton for 15% ore. Increasing to $34.81 for 30% ore. (Montana ore must contain not less than 90% as carbonate).

MOLYBDENUM CONCENTRATE: 90% MoS_2. F.o.b. Climax, Colorado. Per pound of contained molybdenum, plus cost of containers $1.00

TUNGSTEN CONCENTRATE: 60% WO_3. Per short ton unit $65.00

URANIUM ORE: **Carnotite-Roscoelite.** F.o.b. purchase depot plus $0.06 per ton mile ($6.00 maximum), Grand Junction, Rifle, Durango, Naturita, and Uravan, Colorado. Salt Lake City, Marysvale, Thompsons, and Monticello, Utah. Shiprock, New Mexico. Base price for 0.10% ore is $1.50 per pound and up to $3.50 per pound of contained U_3O_8 plus $0.75 per pound for each pound in excess of 4 pounds per short dry ton and an extra allowance of $0.25 per pound for each in excess of 10 pounds. A $0.50 per pound development allowance paid on all ores purchases. At shiprock all ores with more than 6% lime are penalized for excess lime content.

VANADIUM ORE: **Carnotite-Roscoelite.** V_2O_5 in ratio of more than 10 parts to 1 part of U_3O_8 are generally acceptable at all AEC depots, but excess not paid for at Marysvale, Monticello and Shiprock.

NON-METALLIC MINERALS

BENTONITE:

Minus-200-mesh. F.o.b. Wyoming points. Per ton in carload lots	$12.50
Oil Well grade. Packed in 100 pound paper bags	$14.00

FLUORSPAR:

Metallurgical grade. 70% effective CaF_2 content per short ton F.o.b. Illinois-Kentucky mines	$42.00-$43.00
Acid grade. 97% CaF_2	$60.00

PERLITE:

Crude: F.o.b. mine per short ton	$3.00 to $5.00
Plaster grades. Crushed and sized. F.o.b. plants per short ton	$7.00 to $9.00
Concrete grades. Crushed and sized	$6.00 to $8.00

SULPHUR: **Long ton, F.o.b. Gulf Coast mines** **$22.00**

Quotations on metals and certain ores through the courtesy of *American Metal Market*, New York, N.Y.

PRODUCTION EQUIPMENT PREVIEW

PEP is just what new equipment, increased mechanization, and new methods can give to your mine, mill, or smelter. This PEP section is MINING WORLD'S way of making available to you some of the finest current information on mechanization.

New Division Aids Instrument Development

Beckman Instruments, Inc. has recently established a new Special Products Division under the direction of Mr. J. F. Bishop which will be devoted primarily to the study and development of special instruments brought to it by industrial organizations. Need for such a division has become increasingly apparent in recent years with the rapid advancements in instrumentation and the realization by industry of the greater speed, accuracy and efficiency which advanced instrumentation provides.

The newly-established Beckman Special Products Division is a completely separate organization within the Beckman Instrument operation with complete development and production facilities particularly designed for the manufacturing and testing of custom-built instruments. Special instruments are already in production by this division utilizing Beckman's experience in large-scale instrument production with the individual attention characteristic of a small centralized group.

If you have a special instrumentation problem, a partially developed instrument design, or a completed prototype instrument already designed and constructed, you may secure complete information on this service by circling 78.

New Bulletin Describes Stephens-Adamson Crusher

Stephens-Adamson Manufacturing Company has just released a new bulletin covering their complete line of crushers. Included are Knittel ring-type crushers, both single and double rotor, single roll crushers, double roll crushers and two-stage double-roll crushers.

Latest addition to the S-A line is the double rotor Knittel crusher for damp and sticky materials. In single rotor, ring-type units there is a tendency for sticky material to build up on breaker plates, greatly reducing capacity and often completely choking the feed. The double rotor unit eliminates breaker plates entirely and is able to handle the same tonnage per horsepower of wet material as the single rotor unit handles dry.

Important installation dimensions are tabulated and the photographs and line drawings illustrate numerous installations and thoroughly explain operating principles. For your copy of Bulletin 12-C, circle No. 76.

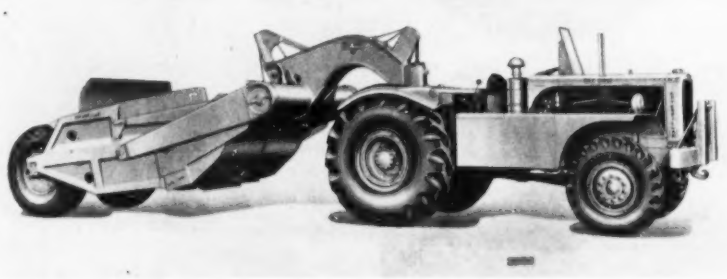
Winslow Engineering Opens Filter Plant in Kentucky

In a reversal of the usual westward expansion trend, Winslow Engineering Company, of Oakland, Calif., has announced the opening of a new factory for the manufacture of Winslow filters and elements in Murray, Ky. The announcement, made by President Charles A. Winslow of the Pacific Coast firm, disclosed that the new plant is expected to get into production within the next few weeks and will be operated independently under the name of Winslow Engineering, Inc.

Manager of the new plant is Joseph L. Kern, formerly office manager at Winslow's Oakland headquarters. Kern, who has been with the filter manufacturer for the past nine years, has been joined in his eastern move by a fellow Californian, Donald R. Robinson, who was named production manager.

Discussing his firm's eastern expansion, Mr. Winslow pointed out that the establishment of the new factory does more than merely increase the potential output of products. "Elimination of much of our trans-continental shipping," he declared "will mean substantial savings, both in delivery time and in transportation costs. These are important economies, both to customer and manufacturer, in the highly competitive situation which prevails in this industry."

Scrapers Match Job Requirements



The Caterpillar Tractor Company has announced two new scrapers for use with the Cat DW10 tractor. With these units the equipment user can now match his rig more closely to his job requirements.

The new Cat No. 10 Scraper is somewhat lighter than before, with capacity of 7 cu. yds. struck and 9 cu. yds heaped. For heavier applications where a pusher is more important, the Cat No. 15 Scraper has been provided. The No. 15 has a capacity of 10 cu. yds. struck and 13 cu. yds. heaped.

Top extensions (sideboards) may be attached to either scraper for increased capacity where the material does not exceed a weight of 2,800 lbs./cu. yd.

The scrapers are similar in basic design. Both have a flat, double-bottom bowl of high-tensile steel. A "stinger" blade with reversible cutting edge is standard equipment. Cable rigging provides for positive loading and ejection. Wheels turn on tapered roller bearings. Air brakes are synchronized with the tractor brakes.

Complete information is available by circling No. 80.

Remove Stuck Materials With Air Vibrator

The use of air vibration equipment in the mining industry is gradually leaving the experimental stage as evidenced by Cleveland Vibrator's new Type F Unit. The ease of maintenance and efficiency of this new unit are shown in solving such problems as plugging, arching and bridging in bins, hoppers, chutes, screens, storage tanks, etc.

Type F is one of a complete line of air vibrators made by the Cleveland concern. This line includes 29 different mountings and 14 different piston diameter sizes. Type F is made in 6 different diameter sizes.

For data on this unit and its installation. circle No. 74.

DRILLING DESCRIPTION: Brief, detailed descriptions of drilling operations and equipment are available in two colorful folders. The literature catalogs various types of McCarthy drills designed for blast hole drilling, earth moving and tunneling. Material includes: installation photographs, case history figures, specifications and a listing of drilling accessories. Circle no. 1.

BULK-FLO CONVEYORS: A 28-page book, No. 2475, published by Link-Belt Company contains information on conveyors and elevators in a wide variety of applications. This booklet shows typical layout drawings, engineering data, calculation tables, charts and formulas and illustrates the Bulk-Flo's design flexibility. For your copy, circle no. 2.

EXPLORATION WITH AERIAL SURVEY: For complete information on the international services and facilities that have made Aero Service Corporation one of the world's outstanding photogrammetric and magnetometer companies circle No. 3.

RESEARCH EQUIPMENT CATALOG: A new 60-page catalog titled "X-Ray Diffraction and Geiger-Counter X-Ray Spectrometric Equipment" has been released recently by the North American Philips Company. In addition to X-Ray diffraction, spectrometry and fluorescence analysis, the catalog covers such components and accessories as tubes, rectifiers and cameras. It also has sections on the Philips Electron Microscope, Geiger tubes, camera mounting brackets, film illuminators and measuring devices and monochromaters. For a copy of the catalog circle No. 4.

AERIAL SURVEYS: Abrams Aerial Survey Corporation is offering a booklet explaining aerial photogrammetry. This booklet shows the planes and cameras used in aerial photographs, and the instruments used in the laboratory processing. The various maps and photographs available from the aerial surveys are illustrated and explained along with the uses that can be made of each type. Circle no. 5 for a copy of the booklet.

ALLOY DATA BOOK: Ampco Metal, Incorporated, has released a revised 20-page bulletin on corrosion-erosion-resistant aluminum bronze alloys. Information on physical and chemical properties, working characteristics, welding advantages, and pumps, valves, and fittings of aluminum bronze is included. Circle no. 6.

LONG-WEARING PARTS: A wide variety of cast and wrought alloy parts now being used in many industries to solve abrasion, corrosion and high-temperature problems is described in a new 24-page Union Carbide booklet, "Long-Wearing Machinery Parts." More than 60 blueprints, tables, and photographs show some of the sizes and shapes in which these Haynes Stellite alloy parts are being used. Circle No. 7.

ELECTRIC MINE CABLES: A new 52-page engineering catalog on its line of electrical wires and cables for the mining industry has been published by the U. S. Rubber Company. Included are complete data on shielded portable cables, welding cables, bore hole cables, mine power cables and miscellaneous mine equipment such as blasting wires, miner's lamp cord and mine telephone cable. Circle No. 8.

PORTABLE GAS CUTTER: The new No. 20 Radiagraph, latest addition to Airco's famous line of gas cutting machines, has been announced by Air Reduction Company. Completely new in design, the No. 20 is the first machine of its type specifically designed to fulfill the requirements for a portable, motor-driven straight track-guided cutting machine. Circle No. 9.

STATIONARY DIESEL: Bulletin #5202, released by the National Supply Company, gives complete design features, capacity tables and dimensions of its Superior Model 65 stationary diesel. The 8-page bulletin describes the different 6 and 8 cylinder sizes available, gives specifications of component parts and lists standard as well as extra equipment. Circle no. 10.

HMS UNITS DESCRIBED: The outstanding line of HMS separators, classifiers, and media densifiers manufactured by Hardinge is described in detail in bulletin No. 39-B. For your copy, circle No. 11.

ALL-METAL BUILDINGS: To protect your equipment and supplies from weather and fire, Columbian Steel Tank Company offers prefabricated all-metal buildings for warehouses, compressor and hoist houses, drys, shops, garages, etc. A minimum of upkeep is required and sectional construction assures low-cost erection. For further information, write Columbian Steel Tank Company, Box 4048-H Kansas City, Missouri or circle no. 12.

DUMPTORS: There will be no need to turn at the loading unit, along narrow haul roads, or at the dump when using Koehring's fast-shuttling Dumptors. The heavy-duty, 6-yard Dumptor has constant-mesh transmission giving the same 3 fast speeds forward and reverse. For information, circle no. 13.

STOPER SAVES CARBIDE BITS: Chicago Pneumatic's CP-34 stoper assures long service from expensive tungsten-carbide bits by combining the right piston and rotating speed, stinger pressure, and hammer blow. The drill features graduated control of feed-leg and an instantaneous pressure release. For complete information, Circle no. 14.

PUMP MAINTENANCE INSTRUCTIONS: Two instruction booklets covering the installation, operation and repair of its single-stage, single-suction and multi-stage centrifugal pumps have been released by Allis-Chalmers Manufacturing Company. Circle No. 15.

POWER CENTER: To maintain better regulation and lower mine losses, carry high-voltage power to the working face by using Westinghouse's Power Center. This unit is contained in a sheet steel case and is small enough to be lowered in mine shafts. For a copy of the booklet on this unit, circle no. 16.

MILLI-SECOND PIT BLASTING: A new 20-page manual describing and illustrating eight methods of blasting pits with millisecond delays has been issued by Atlas Powder Company. Copies are available to all interested. Circle No. 17.

FILTER CLOTH: Do you need a filtering cloth that is highly resistant to common alkalies and heat, having a great tensile strength and with a smooth non-clinging surface? For such purposes, the National Filter Media Corporation offers a nylon filter cloth. For laboratory test samples to re-check its values for your requirements, circle no. 18.

TOURNADOZER BULLETIN: LeTourneau Super C dozer has finger-tip controls, automatic transmission and can be equipped with time saving attachments. For complete information on how you can "Get more work done with Super C Tournadozer" circle No. 19.

LIGHT PLASTIC PIPE FITTINGS: American Agile Corporation now produces

Circle numbers and mail this card for free product literature

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July '52

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standard light-weight plastic pipe fittings that can be incorporated in present cast-iron pipelines where corrosive solutions present problems. Circle No. 20.

WELDER'S WALL CHART: A colorful wall chart listing all of the Ampco bronze weldrod and wire products by trade name, together with AWS-ASTM designation, has been released by Ampco Metal, Inc. In addition the chart records typical applications, mechanical properties, deposit chemical composition, recommended current and polarity, N.E.M.A. color markings and diameter sizes. For a copy of Ampco's wall chart, circle No. 22.

MILL GRINDING HANDBOOK: One of the most comprehensive collections of engineering data on grinding mills for the mining industry is contained in a new 44-page bulletin released by Allis-Chalmers Manufacturing Company. For your copy, circle No. 68.

CLASSIFICATION COMPARISONS: The Dorr Company has published Bulletin No. 2500 on Dorrclones to illustrate for practising engineers how wet cyclones compare with conventional classifiers in various mill circuits and under various classification requirements. Circle No. 24.

AUTO-FOCUSING PROJECTOR: A new portable reflecting projector with automatic focusing for use in transferring details from an aerial photograph to the mapmaker's drawing board, has been worked out by members of Geological Survey and engineers of Reed Research, Inc. For further information, circle No. 28.

TRACTOR TOOL CATALOG: A 2-color catalog featuring tractor tools for use with Caterpillar-built tractors and equipment has just been issued by the Hyster Company. The six-page description includes the complete line of Hyster tractor tools and graphically shows practical applications of the equipment to multiply tractor uses and increase tractor production. Circle No. 29.

DRAG LINE BUCKET CHAINS: Bulletin No. 552 dealing with Tisco Manganese Steel Drag Line Bucket Chains is offered by the Taylor-Wharton Iron & Steel Company. For the latest information on bucket chain developments, circle No. 30.

EMERGENCY VENTILATION: An improved device for moving large volumes of air quickly and economically in situations requiring intermittent or emergency ventilation, is described in a new four-page bulletin published by Mine Safety Appliances Co. Portable and light-weight, the instrument is adaptable for use in plants, mines and wherever circumstances make it necessary to remove air contaminants from confined areas or to introduce fresh air for safe ventilation or rapid cooling. Circle No. 31.

DUST RECOVERY: Buell Engineering Company has a new bulletin on "The Collection and Recovery of Industrial Dusts." The 28-page book has complete information on systems of recovery that will boost plant yield, improve product and process, and eliminate air pollution. For a copy, circle no. 26.

SINTERED BIT MATRICES: Anton Smit & Company offer a line of diamond bits designed to answer the specific requirements of any drilling problem. The tungsten alloy powdered metal matrices of these bits are available in three hardnesses for abrasive, hard, or soft formations. For full information, circle no. 37.

LIGHT-WEIGHT PIPE FOR MINING: A new bulletin has been released showing typical applications of Naylor Lockseam Spiralweld pipe in the mining, construction, oil and related industries. For a copy circle No. 41.

UNIQUE LUBRICANT: Molybdenum polysulfide has proven to be an effective lubricant where other materials fail. Climax Molybdenum Company's booklet on Moly-Sulfide covers specifications and applications. Circle No. 43.

FILTER FABRICS: Due to a time-tested combination of virgin wool and synthetic fibers, FumeAll fabrics have the superior filtering characteristics of all-wool cloths and the strength as well as the heat, alkali, acid and moisture-resistance of synthetic materials. For samples and additional details, circle no. 45.

NEW MAGNETIC SEPARATOR: Dings Magnetic Separator Company is now producing a new cross-belt type EBK unit for the concentration of such slightly magnetic materials as monazite, garnet, hubnerite, ferberite and manganese. Full information on new features, including a new pole nose construction that has doubled separating capacity, is available by circling no. 46.

NEW MOTORIZED HEAD PULLEY: Representing a new departure from conventional types of conveyor drives, this new motorized pulley is a fabricated steel drum, normalized to relieve stresses, with self-contained electric motor and reduction gears. The new Schrock unit will find application in mining, milling and crushing operations, where its compactness will reduce space requirements and its simplicity and mobility provides major time and labor economies. For detailed bulletin issued by Yuba Mfg. Co., circle 47.

FOUR-ARM TORQ THICKENER: 4-Arm feature providing continuous torq raking action makes lighter work of heavy ore tailings, reduces overload and eliminates danger of stalling and damaging the thickener unit. New Door Bulletin 3001 providing full details of this equipment may be obtained by circling 51.

PUMPING SMALL PULP VOLUMES: New Wemco bulletin describes light-weight compact features of 1¼" and 1½" line of sand pumps. To obtain copy of Bulletin No. P-15-1-1 circle 52.

LONG-RANGE SCRAPER EXCAVATORS: New Sauerman Bulletin describes methods for fast haulage by a single operator of large yardages from any point within cable radii, including down into deep pits, up hills or across a wide stockpile. For complete catalog circle 55.

NEW SYMONS "V" SCREEN: Nordberg Mfg. Co. has announced a new high-capacity unit for sharp separation of wet or dry materials from 4-mesh to very fine sizes. Machine combines centrifugal action with five times the force of gravity with a gyratory movement, providing greatly increased capacity and utilization of product heretofore difficult to screen. For complete data circle 60.

L-B SPEEDER CATALOG: Link Belt Speeder Corp. has issued a new catalog No. 2373 including "master books" giving complete data on each of the company's models of shovels, draglines and cranes for convenience of owners. Circle 66.

SHOCK ABSORBING: A method of eliminating severe shock and vibration on hydraulically operated bucket loaders, power shovels, and other tracked or rubber tired equipment is described in a new Greer Hydraulics' booklet. Circle no. 72.

For Free Product Literature, see other side

Stationary Power Unit Added to Oliver Line

A new and heavier series of power units developing 73 horse power has been added to the stationary power unit line of the Oliver Corporation. The new series, called the 199, increases the work range of this new line of products.

The 199 engines are available for gasoline and diesel fuels and engineering

development is now being completed for LP gas. The 199 is a six cylinder engine which draws upon Oliver's long experience in the tractor field and features over-head valves, replaceable cylinder liners, and other design and engineering characteristics which have proved valuable in extending the life of tractor and power unit service.

The engine has a 4" bore, a 4" stroke, and a displacement of 302 cubic inches. Maximum continuous duty RPM is 1800, with intermittent duty at 2000 RPM, and a governed speed range from 1200 to 2000 RPM, with close governor regulation.

For further information on this unit, circle 75.

New Analytical Standard Now Used For Chrome Ore

An industry standard sample for metallurgical chrome ore has recently been established through a cooperative study by several of the leading metallurgical and chemical laboratories experienced in chrome ore analysis in the United States, Canada, and the Union of South Africa. A careful analysis of the ore, containing 50.96% Cr_2O_3, for chromic oxide, iron, silica, alumina and magnesia has filled a long expressed need of the industry for a reference standard having a chromic oxide content higher than that of the chrome refractory containing 36.97% Cr_2O_3 now obtainable from the National Bureau of Standards. Portions of the sample and copies of the analysis certificate are available without charge to industrial and commercial laboratories directly concerned with chrome ore analysis upon application to Merton H. Davey, Andres W. McCreath & Son, Harrisburg, Pennsylvania.

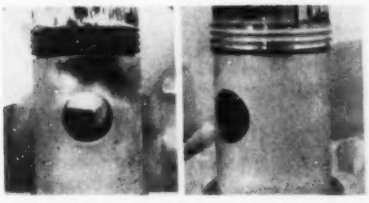
The sample was prepared by thoroughly mixing a finely ground sample of Turkish chrome ore. After preliminary tests for chromic oxide and iron on several portions of the sample by two laboratories had established its uniformity, samples were distributed to the cooperating laboratories for analysis. The analyses were correlated and the analysis certificate prepared by the Research laboratories of the Mutual Chemical Company of America, Baltimore, Maryland.

Details of the preparation of the sample, and a general review of current analytical procedures and results on chrome ore, are contained in a paper which has been prepared for publication by Winslow H. Hartford, Research Supervisor, Mutual Chemical Company of America. For copies of this paper circle No. 73.

Engines Gain Longer Life With New Lube Oil

To solve problems of engine wear and fouling caused by certain operating conditions that are aggravated by low loads, high sulphur fuels and low temperature operations, a new oil has been developed by Shell Oil Company. This new product, Shell Rimula Oil, is now in use in many industries using diesel engines for stationary or mobile power.

Through extensive tests, Shell Oil has shown that Rimula Oil effectively com-



bats sludge and lacquer deposits and extends significantly serviceable life of engines by reducing cylinder, ring, piston, and bearing wear.

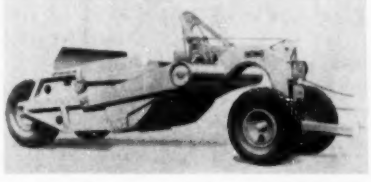
In the accompanying photograph, comparative conditions on a diesel earth moving tractor engine show that when Shell Rimula Oil is used (in the picture at the right), there is considerably less liner wear, top ring wear, and much less lacquer than when a standard heavy duty oil is used on the same engine.

To obtain further details on this product circle No. 72.

New Scraper with Increased Capacity

A new No. 60 Scraper for use with D6 Tractor power has been announced by the Caterpillar Tractor Company.

This new unit has a flat-bottom bowl and stinger blade engineered for loading and finishing characteristics. The capacity of the No. 60 has been increased to 7 cu. yds. struck and 9 cu. yds. heaped.



Top extensions or sideboards are available to boost this capacity to 8.3 cu. yds. struck and 11.5 cu. yds. heaped. Maximum carrying capacity is 11.5 tons.

Also included in this No. 60 are such design details as an unobstructed bowl, tapered roller bearings at the axles, induction hardened sheaves and bulldozer-type ejection. Operation is by means of a Cat Cable Control available for attachment to the tractor.

Further information on this new unit may be obtained by circling No. 71.

Notes From The Manufacturers

Marion Power Shovel Company announces the opening of a new parts warehouse to serve Arizona, Utah, Nevada and Western New Mexico. The building, located in Phoenix, will have rail facilities and a loading dock. Manager of the warehouse is Hal A. Fisher.

Norman A. Matthews has been appointed assistant chief metallurgist of *American Brake Shoe Company's* metallurgical research department at Mahwah, New Jersey. Mr. Matthews joined American Brake Shoe in 1946 and was formerly division metallurgist for the Electro-Alloys Division.

Southwestern Engineering announced the opening of an engineering office at Hibbing, Minnesota to provide service on the Mesabi Iron Range. The Hibbing office will specialize in the design and construction of beneficiation plants for iron ore and other industrial installations. Herbert V. Hughes, industrial division manager, will head the staff and during the early stages of operation will headquarter in Hibbing. Southwestern Engineering has designed and constructed metallurgical plants throughout the United States and Europe for over 30 years.

Kenneth C. Towe, associated with *American Cyanamid Company* since 1926 has been elected president of the company. Mr. Towe has been a director of the company since 1939, and is a director of several companies associated with or subsidiaries of American Cyanamid. Before becoming president, Mr. Towe was vice president in charge of finance.

Kenneth E. Deardorff has been promoted to assistant manager of the export sales department of *Euclid Road Machinery Company* with headquarters in Cleveland. F. R. Sweeney has taken over Mr. Deardorff's vacated post as district representative of the Latin American Division and during the next several months will visit various parts of Latin America to assist in the application of Euclid earth moving equipment to mining, quarrying, and heavy construction.

Philip J. McGuire has been appointed director of research and development at *Oliver United Filters, Inc.* to implement their product diversification program and coordinate the development of new items. He is succeeded as western division sales manager by James B. Hoxie.

Denver Equipment Company now has new distributors of their products in Duluth, Minnesota and Ishpeming Michigan. The Road Machinery Supply Company of Duluth will handle Deco products in northern Wisconsin and Northern Minnesota and Charter, Inc. of Ishpeming will handle the upper peninsula of Michigan. This is part of Denver Equipment's new program of expanded service to the Iron Range.

W. A. Clayton has been named sales manager of *Chain Belt Company's* Construction Machinery division. He has been eastern regional sales manager of the division since 1948.

Changing Industrial Highway

"Power corrupts and absolute power corrupts absolutely."

"No government can continue good but in the hands of the people."

"An elected despotism was not the government we fought for, but one which should not only be founded on true, free principles, but in which the powers of government should be so divided and balanced among general bodies of magistracy that no one could transcend their legal limits without being effectually checked by the others."

—Thomas Jefferson.

In previous columns we have pointed out that, while forming labor empires, the leaders, by coordinate action, were trying to force private enterprise out of industry so that all such activity would be under governmental ownership. This transilient program of the unions has been used against major industries, and mining now seems to be the next target.

A reading of "The Federalist" indicates that the founding fathers, while differing as to details, were all determined that the average man should have the greatest freedom of mind and action. It might all be summed up in one brief sentence—"The best government is the one that governs the least."

In these later days strange theories have been developed, which run counter to personal liberty and private enterprise. They are being propagated with an almost evangelistic zeal. This is no sporadic movement, but is a directed campaign within the government, with a textbook outlining the methods of infiltration.

We quote briefly from that textbook: "This side of revolution we can have only what opportunities as we can make for ourselves . . . to convince both workers and the middle class that we are right—that the abolition of the profit system is to their advantage. . . . *One good man with his eyes, ears and wits about him inside the Department . . . can do more to perfect the technique of control over industry than a hundred men outside.*" The proof of this continuing campaign lies in the hundreds of dismissals of government workers as "bad security risks."

From the above and our recent columns, it is apparent that forces that are seemingly far apart are both working toward a common end—namely, the abolition of our private enterprise system and the formation of a Corporate State, controlling all industry. The recent seizure of major industries is merely a sort of "softening-up" stage. When high government officials speak glibly about "paramount powers" and "sovereign rights" we have every reason to STOP, LOOK, and LISTEN!

Lest we should be downhearted let us remember . . . "NO PERSON . . . SHALL . . . be deprived of life, liberty, or PROPERTY, without due process of law, nor shall PRIVATE PROPERTY be taken for public use without just compensation."

"The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or TO THE PEOPLE."

"ETERNAL VIGILANCE IS THE PRICE OF LIBERTY!"

'The Wanderer

precipitates—CENTRAL and EASTERN

Foote Mineral Plans Huge Lithium Expansion

A $3,000,000 expansion program designed to meet the increased military and civilian demands for lithium chemicals is being planned by Foote Mineral Company of Philadelphia. The program includes construction of the world's largest lithium chemical plant at Sunbright, Virginia.

The new plant, which will more than double the present U.S. capacity for lithium chemicals, will be designed and built by the Blaw-Knox Construction Company. Construction will start this summer and operation is expected by the middle of 1953. Foote will also construct facilities for quarrying and processing limestone at the Virginia installation.

At King Mountain, North Carolina, additional mining, milling, and processing equipment will be installed to triple the output of spodumene, the basic lithium ore. Surface rights to about 37 acres of land adjoining other holdings in the area have been purchased. The new tract is a portion of the Park Yarn Mill, to which Foote acquired the mineral rights in October 1951. The property which Foote controls in the King Mountain area is reported to contain the largest known reserves of lithium ore in North America.

To Drill for Phosphate Deposits in Florida

Exploratory drilling for phosphate deposits will be conducted in Duval County, Florida, by Amco Exploration Inc., a subsidiary of the American Metal Company Ltd.

Authorization has been granted by the Board of County Commissioners, following approval by the Florida Geological Survey. The company will do its drilling along the outside edge of county rights-of-way, and will make regular reports to the Geological Survey which, in turn, will make the exploration results public. While there is no immediate danger of exhausting Florida's phosphate deposits, additional deposits would be of great economic benefit.

The *New Jersey Zinc Company* has opened an exploration office at Platteville, Wisconsin, to serve as a base for exploring for zinc deposits in leased properties located between Shullsburg and Platteville. J. M. Hague, formerly of the Franklin, New Jersey geological staff, will assume the title and duties of Resident Geologist, in charge of exploration in the Wisconsin zinc field. L. E. Antonides, formerly operations engineer with the *Warren Foundry and Pipe Corporation* at Mount Hope, New Jersey, will be in charge of engineering.

The *Homestead Mining Company*, a newly organized firm, has received an RFC loan for construction of a 100-ton flotation mill. Work will begin immediately on a site just outside the city limits of Platteville, Wisconsin. Zinc-lead ore from three different properties will be milled—the *Acme*, *Homestead*, and *Rasque*.

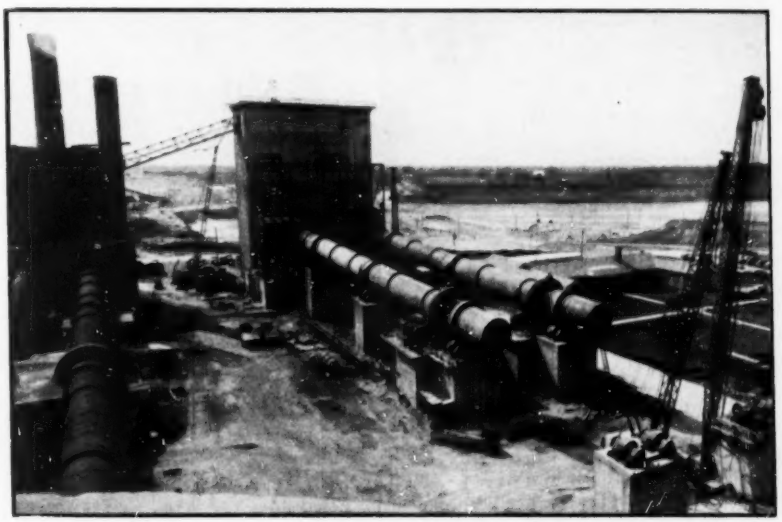
The *Eagle Picher Company* has finished an 1,809-foot, 10-percent incline to its zinc-lead ore body on the *Sadie Birkett* property near Hazel Green, Wisconsin. Work is now being done underground on installing a pan feeder, primary crusher, conveyor, and ore bins. Ore will be hauled from the working face by Dumptor trucks to a primary crusher. From this, it will travel by conveyor to storage bins, and from these bins other trucks will haul the ore to the company's mill north of Galena, Illinois for treatment.

Western-Knapp Engineering Company has opened a Chicago project office to handle the engineering work connected with the development of the *White Pine Copper Company's* property in northern Michigan. The *Reconstruction Finance Corporation* has granted a loan of $57,000,000 to put the *White Pine* mine into production. W.K.E. has been selected to design the mine, mill, and smelter facilities. Project executive will be Warren L. Howes; project manager will be David R. Straub. The new project office is at 431 South Dearborn Avenue, Chicago.

The old *Dark Horse* mine at Linden, Wisconsin is being put back into production. A three-quarter-cubic-yard clam shell was used to clean out the 90-foot shaft. The mine is presently being dewatered. Zinc lead ore from the mine will be crushed, preconcentrated by jigs, and then hauled to one of the custom flotation mills in the district.

A five-year contract has been signed by the *Defense Materials Procurement Agency* and the *Fansteel Metallurgical Corporation* of North Chicago, Illinois which will expand production of columbium and tantalum. The company has agreed to enlarge production facilities at its North Chicago, Illinois plant at its own expense. The government in turn will guarantee a market for that portion of the production which is not required immediately for defense purposes. Fansteel estimates that it will cost about $455,280 to step up its output of potassium tantalum fluoride to double the present capacity. The firm will also recover columbium oxide from low-grade ores and residues.

The *Vinegar Hill Zinc Company* of Platteville, Wisconsin, has completed a drift of approximately 1,300 feet from its *East Blackstone* zinc-lead mine, three and one-half miles south of Shullsburg, Wisconsin, to the *Handcock* orebody. Zinc-lead ore from the Handcock is now



GIANT KILNS BOOST DOLOMITE OUTPUT

Two new rotary kilns, the largest in the refractory industry, have been placed in operation at the Maple Grove, Ohio plant of Basic Refractories Incorporated as part of the company's $3,500,000 expansion program. Measuring 390 feet in length and 11 feet in diameter, they will "dead-burn" approximately 2,000 tons of dolomite daily, expanding Basic's annual production of granular dolomitic refractories by 50 percent. In the view of the kiln assembly above, it can be seen that the drive section was the first to be mounted. Other sections were hoisted into place and alignments carefully checked before welding was done.

being hoisted through the East Blackstone shaft. Three and one-half miles southwest of Shullsburg, Vinegar Hill has completed the headframe and shaft on the new *Mulcahy* zinc-lead orebody. Full production is expected this month.

EASTERN STATES

The *Ruberoid Company* at Hyde Park, Vermont, and the *Barton Mines Corporation* in Warren County, New York, both received certification from the Defense Materials Procurement Agency for the construction of mine access roads. Ruberoid will build a four-mile road to its asbestos property and Barton will build a 3½-mile road to its garnet property.

The *Bland Mining and Manganese Corporation* was formed recently to carry on mining operations in Bland County, Virginia. Capitalized at $25,000, the company plans to mine and process manganese and other ores.

Beryllium Development Inc. has started operations in connection with the exploration, development, and mining of the pegmatites in the Newry Mountain district near Andover, Maine. The firm is a subsidiary of the *Beryllium Corporation* of Reading, Pennsylvania.

IRON RANGES

The *Jones & Laughlin Ore Company*, operating the *Benson* iron ore mines at Star Lake, New York, has merged with its parent company, the *Jones & Laughlin Steel Corporation*, and will now be known as the *Jones & Laughlin Steel Corporation, New York Ore Division*. Operations at Ishpeming, Michigan, will come under the Michigan Ore Division.

Shaft sinking continues at *Pickands Mather & Company's Peterson* mine at Bessemer, Michigan. It is down more than 1,300 feet and will be sunk to an estimated 3,900 feet. The Peterson is made up of the old *Yale*, *Colby*, *Ironton*, and *Puritan* mines, some of which were opened up more than 50 years ago.

The *Jones & Laughlin Ore Company's* new *Tracy* mine shaft at Negaunee, Michigan, is being constructed so that minimum repairs will be required during the life of the mine. Since skips which will carry 12 to 15 tons of ore will be hoisted at the rate of 1,600 feet per minute, it is essential that the skip guides be firmly held in place. To accomplish this, every even numbered set is being concreted to the rock, and the odd numbered sets use bags of concrete for blocking. Concrete is mixed on the surface and sent down the shaft through a six-inch pipe. The Tracy is scheduled to join the ranks of 1,000,000-tons-per-year underground mines when full production is attained.

The *Plymouth Mining Company*, in order to mine about 400,000 tons of merchantable ore near its *Wakefield* mine in Michigan, is diverting the Little Black River around the ore body. Peter Relich, a Bessemer, Michigan contractor, is digging the new channel.

The *Great Northern Railroad* is gradually replacing its giant steam Mallets for hauling iron ore from the Minnesota ranges to Lake Superior with Diesel locomotives. The seven three-unit Diesel electrics now in use are expected to be increased to 15 this month. They are faster, making two round trips in twenty-four hours, and able to haul more cars than the steamers they are displacing.

The *Hanna Coal and Ore Corporation* is building a washing plant at the *Carlz* mine at Keewatin, Minnesota. Two 78-inch and one 72-inch simplex spiral washing classifiers will be used.

A law which postpones full taxation until a property enters into the merchantable output stage of production—up to 10 years—has stimulated exploration work in Michigan iron ranges. A second law, which has passed the house but not the state senate, aims to clear title in cases of mineral rights. It would require owners of mineral rights to re-register them at five-year intervals, with penalty of forfeiture. This bill is to be studied and reported on by a committee. Because second and third generations of mineral-rights owners are now scattered far and wide, the ownership of rights on some properties is difficult to untangle.

precipitates—ROCKY MOUNTAIN

Consolidated Uranium Now Ships 2000 Tons Monthly

Consolidated Uranium Mines Inc. is shipping 2,000 tons of uranium-vanadium ore per month from its Temple Mountain operations in Emery County, Utah. According to company president George Frawley, half of the ore is being trucked to the U. S. Atomic Energy Commission's plant at Monticello, Utah, and half is being railed from Green River, Utah to the Salt Lake City plant of Vitro Chemical Company.

The company is continuing exploration long-hole "dry" drilling, in addition to diamond drilling. The exploration branch of the AEC also drilled a large number of holes on the company's leased mining claims. Consolidated is continuing its major program of mine mechanization and now uses Diesel- and air-operated underground loaders, electric shuttle cars, air slushers, and air-powered locomotives.

Mining To Be Permitted In National Monument

A recent agreement between the National Park Service and the U. S. Atomic Energy Commission marks the first time that exploration and mining have been permitted in a national monument. The AEC has a seven-year permit to develop and to extract any government-owned uranium ore which may exist within the boundaries of the Capital Reef National Monument in Wayne County, Utah.

According to Frank H. MacPherson, manager of the Colorado Raw Materials Office of the Atomic Energy Commission, the AEC will require all operators to comply with a rigid set of regulations designed to insure perpetuation of the beauties of the monument and to insure proper mining methods.

Building Lead-Zinc Mill in Colorado

The Venture Leasing Company has started construction of its new differential lead-zinc mill in Mastodon Gulch, two miles west of Animas Forks, San Juan county, Colorado. The new concrete and steel mill building will be 25 x 85 feet in size. Rated capacity will be 60 tons per day. The new mill building will be a Butler prefabricated steel building. It is the first use of this type of prefabricated mill building in the San Juan district of Colorado. The mill building and mill equipment was purchased through the Telluride Iron Works Company of Durango, Colorado.

The mill is being built at the portal of the lower tunnel of the Gold Prince mine. Partners in the company are William Gianetto, John Cook, and Leslie Larson of Silverton, Colorado. Company operations are being financed with funds from a Reconstruction Finance Corporation loan granted late in 1951.

Trucking of supplies to the mill and hauling concentrates to the railroad at Silverton will be expedited by a new road which is under construction from a point near Animas Forks up Mastodon Gulch to the mill.

COLORADO

W. L. Davenport, Harold Horn, and Marvin Burger, who are operating the *Wellington* mine at Breckinridge, Summit County, Colorado, have reported they have driven a crosscut from the *Buell* tunnel to the Prize Box vein. About 250 tons of lead-zinc ore per month is mined by a crew of 15 men and shipped to the *Resurrection Mining Company's* custom mill at Leadville, Colorado, for processing. The Prize Box vein was extensively mined in other sections by former operators. Drifting on the veins in both directions from the crosscut is now underway.

Development operations at the *Carbonate* lead-zinc mine has been resumed by Eddie Baer and Ken Erickson. The mine, near Rico, Dolores County, Colorado. did not operate during the winter months.

The *Old Hundred Gold Mining Company* is shipping 300 tons of lead-zinc-silver ore per week from its *Old Hundred* mine in Cunningham Gulch, San Juan County, Colorado, to the *Shenandoah-Dives Mining Company's* custom flotation mill at Silverton. Twenty men are employed at the mine under the direction of W. G. Sandell, superintendent. Ben F. Webster, Jr. is general manager of the company's operations.

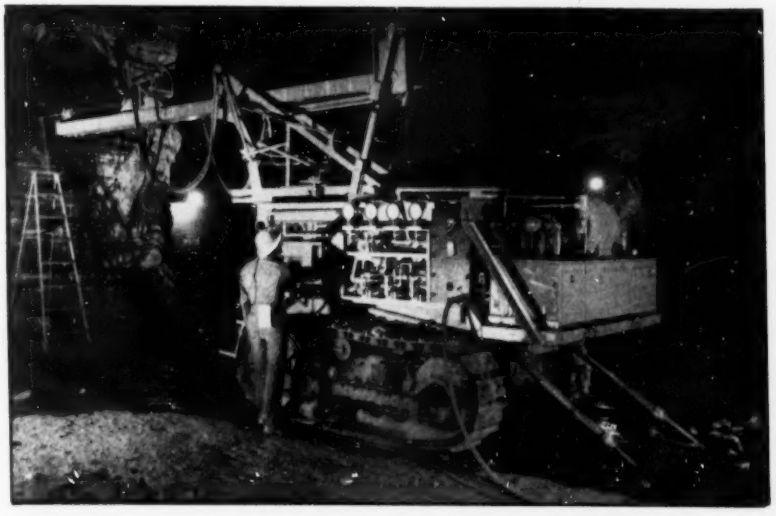
The *Silver Bell Mines Company* has installed a zinc flotation unit at its Silver Bell mill at Ophir Loop, San Miguel County, Colorado. The new flotation section is recovering zinc from the mixed sulphide ore mined at the company's *Carbonero* mine above Old Ophir. According to A. A. Smith, superintendent, the Silver Bell ore, for which the mine was originally built, did not have a high enough zinc content to warrant a zinc flotation section. Ore from the Carbonero mine is trucked to the mill over a road which was completed last year.

Mike and Pat Vinson and Fred Haris of Breckinridge, Colorado, have reopened the *Chataqua* lead-zinc mine in Montezuma County, Colorado.

Bert Goodman has resumed shipments of lead-zinc-silver ore from the *Bullion* mine in Montezuma County, Colorado.

The *American Zinc, Lead and Smelting Company* has resumed shipments of zinc-lead ore from the *Caledonia* mine 6 miles north of Silverton, San Juan County, Colorado. The ore is trucked to the zinc company's American No. 1 differential flotation custom mill at Uray, Colorado. H. L. Miller of Uray is general superintendent.

The *U. S. Oils and Metals Corporation* has made its first shipment of lead-zinc



NEW ROTARY DRILL FOR OIL SHALE

U.S. Bureau of Mines engineers have developed a hydraulic rotary drill for use in the experimental oil-shale mine near Rifle, Colorado. Drilling blast holes at an average rate of 69 inches a minute, this equipment has cut drilling labor costs in half and reduced the costs of bits and drill steel. The drill motor can operate at any speed up to 1,050 revolutions a minute, and the feed motor can deliver any desired thrust up to 4,000 pounds. In general, low speed and high thrust give the longest drill life, while high speed and high thrust give the highest drilling rates.

milling ore from its *Henrietta* mine. The ore is trucked to the *Shenandoah-Dives Mining Company's* custom flotation mill at Silverton, San Juan County, Colorado. Stoping to date has been on the Surprise vein. The Corporation is continuing its work of reopening the old mine workings leading to the Henrietta vein.

Consultants to the *U. S. Atomic Energy Commission's Advisory Committee on Raw Materials* have recently completed a tour of the uranium mining and milling operations in Colorado, Arizona, New Mexico, and Utah. Frank H. MacPherson, manager of the Colorado Raw Materials office of the AEC; Thomas W. Oster, chief of the Grand Junction exploration branch of the AEC; and Dr. Phillip L. Merritt, assistant director of the raw materials office at New York City, conducted the tour. AEC consultants making the trip were committee chairman Donald H. McLaughlin, president of *Homestake Mining Company*, San Francisco, California; Ira B. Joralemon, geologist, San Francisco, California; Thorold F. Field, mining engineer of Duluth, Minnesota; John K. Gustafson, geologist of Cleveland, Ohio; Orvil R. Whitaker, mining engineer, *Molybdenum Corporation of America*, Denver, Colorado; and Everette L. deGolyer, petroleum geologist of Dallas, Texas.

Production of pitchblende ore has been started at the old *Copper Bug* mine west of Larimer County, Colorado, by T. H. Sackett of Fort Collins and associates. Ore is mined from stopes on the 100-foot level. Mine development has been aided by a Defense Minerals Exploration Administration loan.

To speed mine development, mining, and shipping of ore and concentrates, the Mining Requirements Division of the Defense Materials Procurement Agency certified the following road projects in Utah for construction or improvement: *Iron County Commissioners* for 10.2 miles of road to iron property in Iron County; Fred Statts for 8.9 miles of road to fluorspar property in Delta, Utah.

The *Plateau Mining Company* of Moab, Utah, has acquired the *Yellow Circle* uranium claims 12 miles east of Moab, Utah. The Plateau company has a 27-man crew engaged in exploration and mining of uranium-vanadium ore at the Yellow Circle claims. Melvin C. Bowles is superintendent of mining operations: Vance Thornburg, Frank Seymour, and Mr. Bowles are company directors.

A new laboratory has been completed by the *Galigher Company* of Salt Lake City at the Atomic Energy Commission's Monticello, Utah, custom uranium mill. The new laboratory, built at an estimated cost of $25,000, replaces a laboratory destroyed by fire last May. H. A. Johnson, resident manager, reported that there was no loss of mill production because of the fire.

Glen and Lee Shumway are shipping uranium-vanadium ore from their mine on Shay Mountain, San Juan County, Utah. Ore is trucked to the Atomic Energy Commission's Monticello, Utah, processing plant.

The *American Smelting and Refining Company* is reported to have acquired five more claims in the Marysvale uranium district of Piute County, Utah from the *Plumbic Mines Company*. Claims include the *Jeepsters No. 1, 2, 3, 4,* and the *Lucky Strike No. 14*. This is the second venture of ASARCO into the area. Several months ago the company obtained leases to about 700 acres of claims controlled by the *Marysvale Uranium Company*. Present plan for the new addition is to diamond drill for uranium ores.

Sulphur exploratory work is under way in Hot Springs County, Wyoming, under a Defense Mineral Exploration Administration contract. Estimated cost of the project is $99,150, with the government's participation estimated at $49,575.

J. B. Stanley, who has leased the sulphur mine near Auburn, Wyoming, from Keith Hyde, has announced that the mine is resuming operations this summer under the name of *Stanco Sulphur Products*. Offices will be at Afton, Wyoming. The sulphur is destined for insecticides. It will be marketed in pellet form, and shipped to the railroad at Cokeville in bulk form.

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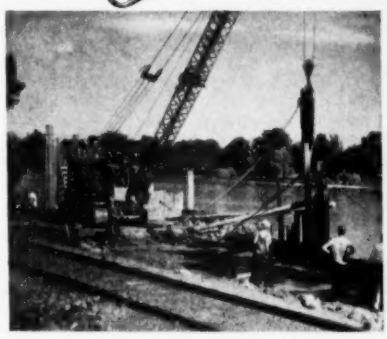

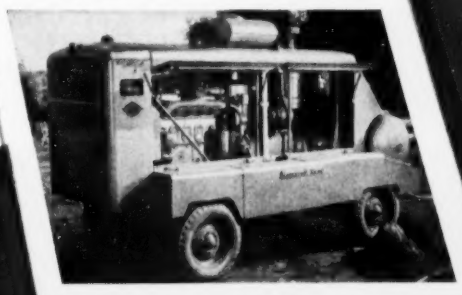

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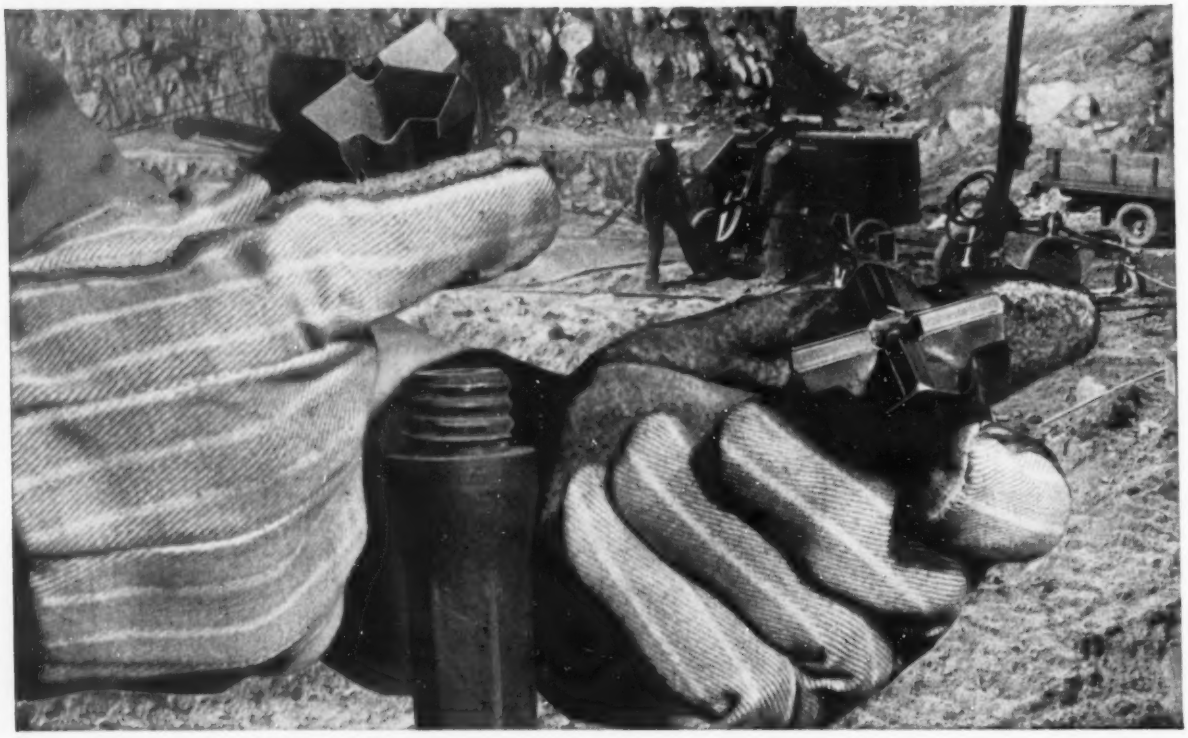

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Phelps Dodge Awards Contract for New Mill

A $900,000 contract has been awarded by the Phelps Dodge Corporation to the Fisher Construction Company of Phoenix, Arizona, for the construction of the concrete portions of the new copper mill at Bisbee, Arizona. Work has already started on the structure, and completion of the major portions is expected within 11 months.

The mill is being erected at a cost of about $7,500,000. It will handle ore from the new Lavender open-pit mine at Bisbee, where preliminary stripping operations have been in progress for more than a year. Production from the mine is scheduled for late in 1954, with the over-all cost estimated at $25,000,000.

Chieftain Mining Co. To Operate Kay Copper Mine

The Black Canyon Copper Company has assigned its lease on the Kay copper mine to the Chieftain Mining Corporation. Present plans call for the erection of a small mill, and production while conducting additional development.

The Kay, located about 50 miles north of Phoenix, Arizona, is owned by the Foster-Judd-Amos interests. It was reopened in mid-1949 by the Black Canyon group and shipments of ore were made. It was then leased to the Shattuck Denn Mining Corporation who spent a considerable sum unwatering the mine down to the 1,200 level and examining old workings. Shattuck also drilled 13 diamond drill holes on the 260, 600, 800, and 1,200 levels. It relinquished its option early this year.

Principals in the Black Canyon organization include J. W. England of Phoenix, and C. W. Gabrielson of Prescott, Arizona.

Mining Company Goes Into Meat Business

To acquire new capital without unduly diluting its capitalization, the Central Eureka Mining Company is reported to have acquired all of the assets of the Kaufman Meat Company of San Jose, California, in exchange for 533,000 shares of Central Eureka stock. Company directors are said to consider the meat business as a sound prosperity business, while the meat firm can use the mining company as a recession hedge.

By the end of last year, Central Eureka had estimated reserves of proven ore amounting to 113,000 tons at 0.442 ounces per ton at its Sutter Creek property in California. Probable ore was estimated at 65,550 tons at 0.455 ounces per ton. These estimates were for the Old Eureka and the Central Eureka mines together. Principal work during the year was in the sinking of the 3,500-foot winze an additional 127 feet, to establish the 4,150-foot level. During the year, 33,421 tons of ore were stoped.

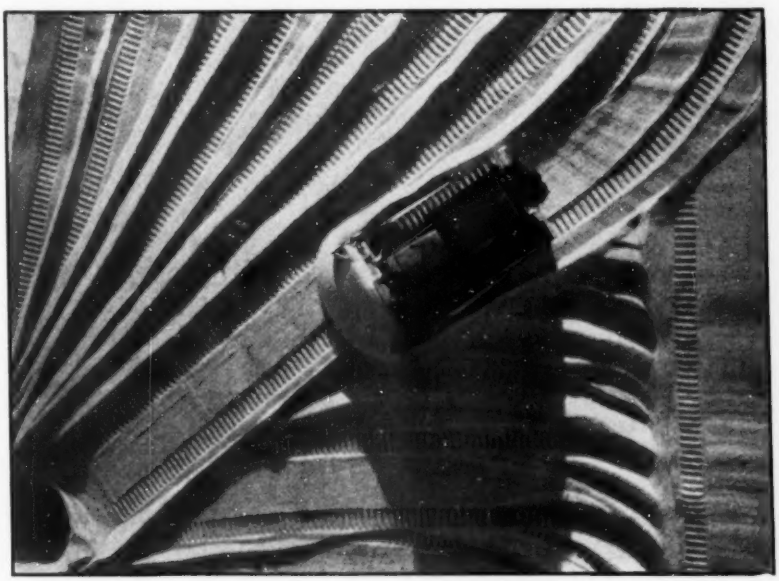
The *Athletic Mining and Smelting Company* at Klondyke, Arizona, is mining and milling about 120 tons of zinc-lead ore daily from its *Head Center* and *Iron Cap* mines in the Aravaipa mining district. The company's *Grand Central* mine, from which carbonate ores were mined and shipped direct to the smelter, is not operating at present. The company is deepening the shaft at the Head Center an additional 150 feet on the incline—from the eighth to eleventh level—and is now down to the tenth level. Considerable water was encountered at that point and is making shaft work more difficult. Harvey L. Horton of Safford is general manager. A. M. Bosworth is mine superintendent.

Les Jarnegin of Arivaca, Arizona, is building a 25-ton mill for treatment of gold ores from his group of three claims. He also proposes to accept custom ores for milling.

William H. Reed and Elton Kidd of Aravaipa, Arizona, are planning to sink a 100-foot shaft on the *Abe Reed* mine, in the Aravaipa mining district, which they hold under lease from Lon Rutledge. The shaft is to be 5 feet by 6 feet, inclined 45 degrees, following the vein. Both men are employes of the *Athletic Mining and Smelting Company* and are working the Abe Reed during evenings and days off. Since acquiring their lease in August 1949, they have shipped nine carloads of ore, about 450 tons. The ore is found in lenses and kidneys in the vein, is a mixture of sulphides and carbonates, and is of direct shipping grade, mostly lead, with some zinc and a very small amount of copper. Mine workings include three tunnels—120 feet, 300 feet, and 450 feet—and a 60-foot raise.

The *Shannon Mining Company* is reopening the old *Shannon* mine near Gleeson, Arizona. A 60-foot steel gallows frame has been erected and considerable retimbering and repair work has been completed. The lead-zinc ore is to be trucked to the company's mill at Tombstone. Freeman L. Lomalina is manager.

E. A. Scholz and J. H. Cazier of Bagdad, Arizona, are working the *Copper King* mine, a group of three claims in the Eureka district of Yavapai County. Production from open-stulled stopes on the 100, 200, and 400 levels is averaging about 300 tons monthly. Stopes are partially filled after ore extraction. Ten men are employed.



STOCKPILING SALT BY TRACTOR

The age-old method of sun and wind evaporation, combined with the use of modern-day machinery, results in the handling of about 800,000 tons of salt each year by Leslie Salt Company. At its four plants in the San Francisco Bay Area, sea water is pumped into a series of diked areas, or ponds, of from 35 to 800 acres each, where solar evaporation begins. As the salt concentration increases, the brine is pumped into diked areas where evaporation continues. At the end of the crystallization period, any remaining water is drained off and the salt is ready to be harvested and washed. It is eventually placed in huge stockpiles by Caterpillar Diesel tractors like the one above, from which it is passed by conveyor belts to the processing buildings.

Seven men are employed in development work at the *Boston-Arizona* mine, near Skull Valley, Arizona. These copper-lead-zinc claims were acquired late in 1951 by F. G. McFarland and S. R. Hullinger of Utah. K. L. Erickson, Bagdad, Arizona, is superintendent and E. F. Myers of Skull Valley, is foreman for the new operators.

The *Knox-Arizona Copper Mining Corporation* is developing the *Copper Mountain* group of claims. New work underway includes driving of a 600-foot tunnel and churn drilling. The tunnel has been driven 120 feet so far, with 50 feet of it in low-grade copper mineralization. W. A. Knox of Ajo, Arizona, is president of the firm.

The *Williams* tungsten mine, 73 miles southeast of Kingman, Arizona, has been taken over under bond and lease by G. B. Blonsky of Rosemead, California. Associated with him is Joseph B. Rice of Altadena, California.

L. Lee Boyer of Tempe, Arizona, is planning for a small mill at the old *Woodpecker* mine, near Superior, Arizona. He expects to use a Sutton, Steele and Sutton dry process plant.

Approximately 500 tons of manganese ore were shipped to the General Services Administration depot at Deming, New Mexico, from the *Prompter* mine of *Tombstone Development Company*, Tombstone, Arizona. This production was made by John Giacoma, a lessee. The ore averaged 23 percent manganese, but since the combined lead-zinc-copper content exceeded the limitation of 1.0 percent, further shipments have been stopped. Efforts are being made to market the manganese elsewhere, but so far no additional shipments have been made.

Cornet and Campbell are shipping fluorite from a property about six miles southwest of Wickenburg, Arizona. The material is going to the *Geneva Steel Company* at Provo, Utah, under a long-term contract.

The *Northern American Tungsten Company* is reported to have leased the *Westlake* tungsten property, 12 miles south of Globe, Arizona, from Mrs. Brice H. Westlake of Globe. Early shipment of wolframite and scheelite are proposed. W. C. Williams is in charge of the work.

The *Montana Arizona Mining Company*, a Montana firm licensed to operate in Arizona, has shipped 12 carloads of copper-silver ore from its *Milton* mine at Lukeville to ASARCO's smelter at El Paso, Texas. Charles R. Anderson, general manager, is in charge.

The advisory committee of the Navajo Indian Tribal Council has approved 30 individual mining permits, covering claims ranging from 20 acres up to a 960-acre maximum, filed by tribesmen. The committee has delayed action on 24 more Navajo claims, pending further investigation. Mining of uranium on the Navajo Reservation, which covers 25,000 square miles in Arizona, New Mexico, and Utah, is developing into a new means of livelihood for the tribe. The new mining permits, along with the leases granted to *Vanadium Corporation of America*, *Navajo Uranium Company*, and *Climax Uranium Company*, will mean employment and royalty benefits to a large number of the 50,000 or more Navajos living on the Reservation.

CORRECTION

The directory of Arizona mines published in the 1951 *Mining World* "Directory of Active Mines" erred in the statements that the Blue Sky Mining Company leased the properties of the Coronation Mining Company, Inc.; that L. A. Linebaugh was vice-president; and that E. O. Northbrook was treasurer. The facts are: that Blue Sky leased No. 14 mine for a period during 1951; that L. A Linebaugh was never a vice president; and that E. O. Northbrook resigned as treasurer.

The *Depot Hill* mine, a hydraulically operated gold placer mine at Camptonville, Yuba County, California, is resuming operations after being closed down since 1942. Gravel will be washed this season with tailings storage behind Bullard's Bar Dam of the Pacific Gas and Electric Company. The property was purchased last summer by Joseph and Blanche Brown from the heirs of Fred J. Joubert. The Joubert family started the operation in 1855. Three monitors operate with 140-foot head at the nozzles. Water is said to be abundant this season and the yardage handled is expected to approximate that of the average season since the late sixties.

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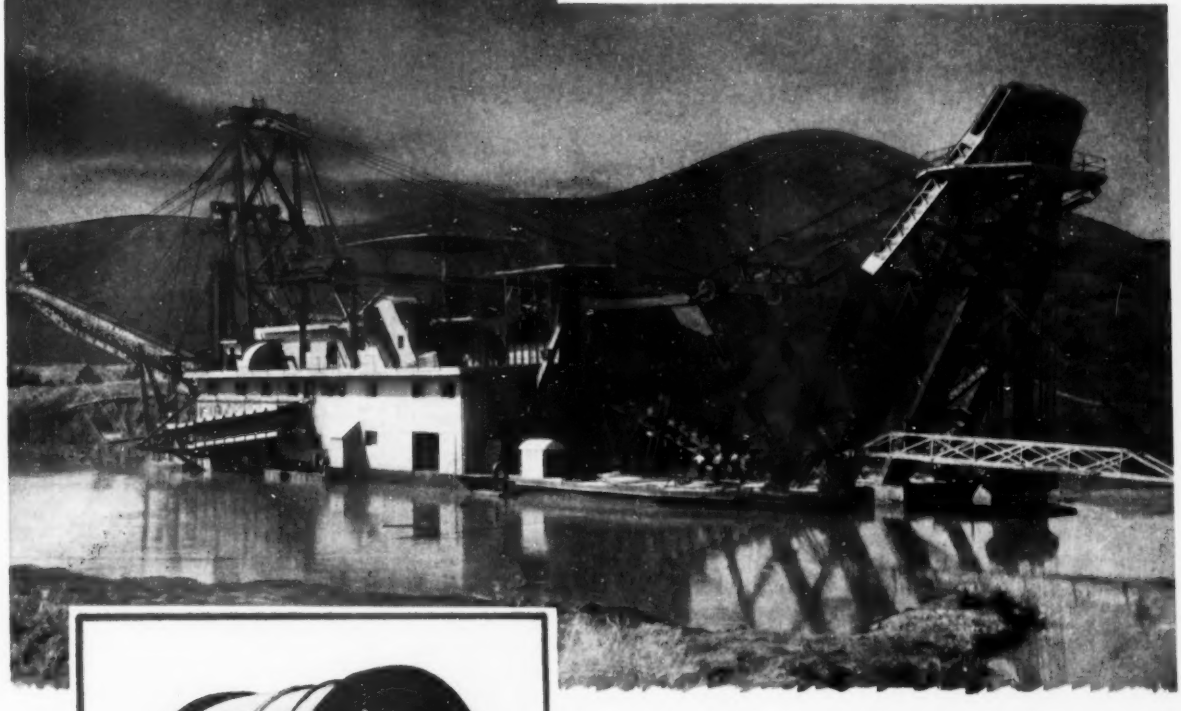

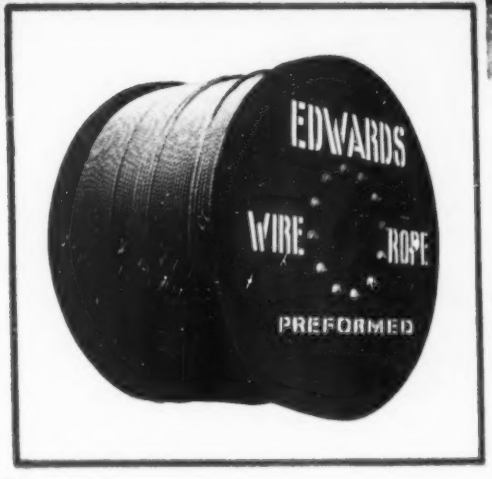

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The *Ubehebe* mine in the Ubehebe mining district of Inyo County, California, has been leased to Henry Hageman, Louis Hinds, Paul Mix, and associates of Beatty, Nevada. Last year the property was operated by W. V. Skinner of Lone Pine, California, who shipped a considerable amount of ore to the smelter. A considerable tonnage of mill ore has been developed through tunnels, crosscuts, and raises. At the present time, the West Drift is being driven to connect with some developed ore on the north end of the property. George Lippencott operates a small smelter about 50 miles from the Ubehebe mine at Bonnie Clair, Nevada, where a mill is also planned. The Lippencott mine is about ten miles from the Ubehebe. Grant Snyder is president of *Ubehebe Lead Mines, Inc.*

The *Siskon* mine near Happy Camp, California, has been acquired by H. B. Chessher of Reno, Nevada, on a life-time lease. Bulldozers are opening the road to the mine and housing facilities and offices are being built at the mine site. A 100-ton mill will be installed and the ore will be moved from open pits by power shovel. Ledges shown on the surface are reported to be 100 feet wide.

Idaho Maryland Mines Corporation treated 141,853 tons of ore in its mills near Grass Valley, California during 1951, yielding 52,228 ounces of gold and 14,225 ounces of silver. This compares with 193,357 tons treated in 1950, yielding 51,697 ounces of gold and 13,298 ounces of silver. Progress in the production of tungsten concentrates was slow because of the difficulty in determining the proper method of recovery. Work will continue on this project. The crosscut on the 3,280-foot level of the mine has not been connected with the 60 winze and no ore bodies have been discovered on this level yet. However, results have been satisfactory and exploration will continue.

Operation of the new custom mill which will handle scheelite ore in the Austin, Nevada area is expected to begin shortly. The 50-ton mill is owned by the *Sunnyside Milling Company* and is reported to have been built primarily for the *Marsam* enterprises, although it will also mill ore for other mines in the area.

Development operations are continuing at the property of *Grand Deposit Mining Company* in the Silver Mountain mining district of White Pine County, Nevada, where the company worked all winter despite the severe snow conditions. The work is partially financed by a DMA loan of $13,400, granted last November. Principal activity is on the 800 level where drifting northwesterly is expected to intersect ore-bearing limestone beds. This formation has produced a major portion of production in the *Grand Deposit* mine from the upper levels. The new drift is being driven into a virgin section which was not previously mined.

The *Buckskin* mine near Yerington, Nevada, has been reopened, for the first

time since 1938, by a new firm, *Copper Butte Mining Company*. The company holds a five-year lease on the property. Repair work is under way, including cleaning out of the tunnel and construction of a change house. Future plans call for construction of a 50-ton mill at the mine site. The new firm was organized by N. L. Brown of Wabuska, who is manager; James G. Hart of Phoenix, Arizona; and Fred M. Mahler of Desplaines, Illinois.

The new *Garnet King Mining Company* in the Cocomunga mining district of Nevada, is planning the erection of a 100-ton mill on its tungsten property. The property is owned by Russell Roper and John King who have leased their holdings to Garnet King. Partners in the firm are J. H. Olsen, K. M. Fletcher, Major E. Allured, W. H. Allured, and Wier Casady, Jr.

Production from the new mill erected by *Manganese Inc.* near Henderson, Nevada, will get under way this month. The firm has spent the last few years remodeling the old plant and building new facilities. Ore from the *Three Kids* mine will be milled at the plant and then shipped to government stockpiles as manganese nodules. S. A. McGonigle is general manager of the company and H. H. West is president.

C & C Tungsten Corporation which operates the *Linka* tungsten property near Austin, Nevada, expects to start shipping crude ore this summer. Scheelite will be trucked to the new mill being built by *Baltimore-Camas Mines* at Ely, which will treat about 50 tons per day.

Kaiser Aluminum & Chemical Corporation has requested electric power from the Truckee-Carson Irrigation District for its proposed fluorspar reduction plant at Fallon, Nevada. A 69,000-volt line from Lahontan Dam to the Kaiser plant is now being built.

Getchell Mines, Inc. milled 140,000 tons of tungsten ore during 1951 from its property in the Osgood Mountains of Potosi mining district, Humbolt County, Nevada. Gross sales of concentrates amounted to $1,728,124, including $209,044 which was the cost of the tungsten ore purchased. George Wingfield, president of the firm, reported that marked improvement in tungsten metallurgy during the last quarter of the year, resulted in a higher proportion of the production being either eligible for sale to the alloy steel companies or to the government stockpile.

The *Los Angeles Chemical Company* is reported to have closed down its mill a Ash Meadows, Nevada, where it had been in operation for six years. LACCO has been operating clay deposits there for 10 years. Dismantling is underway and the machinery is being moved to the company's plant at South Gate, California.

NEW MEXICO

The mining properties and equipment of the *Navajo Uranium Company* have been acquired by the *Kerr-McGee Oil Industries, Inc.* The purchase includes the uranium rights held by the company on the Navajo Indian Reservation in the four-cornered area of New Mexico, Arizona, Utah, and Colorado, as well as an ore sampling plant at Shiprock, New Mexico. The business partners are Senator Kerr of Oklahoma and Dean A. McGee, who is executive vice president of the firm.

The *United States Smelting, Mining and Refining Company* is operating leases under option on the old *Atlantic* shaft owned by the *Savannah Copper Company* of Milwaukee, Wisconsin. This old lead, zinc, copper, gold, and silver producer is located about a mile east of Pinos Altos in Grant County, New Mexico. U. S. Smelting is repairing the shaft in preparation for some exploration work.

The 1953 annual convention of the *New Mexico Mining Association* will be held in Albuquerque January 22, 23, and 24. Headquarters for the convention will be the Alvarado Hotel. President John A. Wood says that about 750 representatives of the mineral industry from the Southwest are expected to attend.

Production is scheduled to start in August on the large potash deposit being developed by *Southwest Potash Corporation* at Carlsbad, New Mexico. At the end of 1951, 65 percent of the work had been completed. After a break-in period of two or three months, initial production will be about 185,000 tons per year. Southwest Potash is a wholly owned subsidiary of *American Metal Company, Ltd.*

The first annual Southwest Mineral Conference will be held in Albuquerque, New Mexico, November 6-8. More than 1,000 persons are expected to attend the meeting, sponsored by the *New Mexico Mining Association* and the *Southwest International Mining Association* of El Paso.

The *Shattuck Denn Mining Company* is reported to have leases on the *Blue Peak* group of claims near Grants, New Mexico, for uranium work. Frank Garrett of Prescott, Arizona, is to oversee the operation.

The *U.S. Manganese Corporation*, with head offices in Phoenix, Arizona, has taken over the milling plant and mining leases owned by *Florida Mining Corporation* at Deming, New Mexico. U.S. Manganese will buy custom ore from the small miners in the vicinity for their 150-ton-daily-capacity mill and will work their own properties, too.

New Mexico miners are reported to be dissatisfied with the federal government's manganese purchasing program which has been in operation for about a year. Executive secretary Dwight Plackard of the *New Mexico Mining Association* has called the results of the program so far "negligible and disappointing." However, he reports that prospects for improvement are good. He says that government officials are working up a countrywide manganese program and that a detailed and comprehensive survey of manganese in New Mexico is also under way. Plackard says that the program being drafted would provide a price of $2.00 or more per unit—which, he says, is not adequate; would apply to operators producing not more than 10,000 tons of ore a year; would limit shipment minimums to carload lots; and would provide a limited transportation allowance. Meanwhile, State Mine Inspector John A. Garcia reports that he expects manganese production in New Mexico for the fiscal year ending June 30, to show an increase of about 2,000 tons over production for the previous year.

International Minerals and Chemical Corporation is slated to build a $2,500,000 plant this summer to take magnesium oxide and hydrochloric acid from a waste by-product in its potash refinery operation near Carlsbad, New Mexico. Reports say that it will take one year to build.

TEXAS

The *Hudspeth Mining Company* has received certification from the DMPA for construction of a nine-mile mine access road to its fluorspar property in Hudspeth County, Texas.

The mining committee of the *El Paso, Texas,* Chamber of Commerce has been reorganized as the *Southwest International Mining Association.* Ben Roberts of the *American Smelting and Refining Company* has been named temporary chairman and George Cates is temporary secretary.

The anticipated shutdown of the Longhorn Tin Smelter at Texas City, Texas, has been delayed indefinitely by the arrangements of shipments of tin ore from Indonesia. Bolivia is the usual source of tin ore for the smelter but negotiations for the renewal of supply contracts have been snagged. The absence of ore contracts and the dwindling ore stockpiles have led to the belief that the smelter would have to close. Arrangements with Indonesia will enable the plant to continue in operation for a few more months, although it will not permit the smelter to reach its normal monthly output of about 3,200 tons. The *Tin Processing Corporation* operates the plant for the *Reconstruction Finance Corporation.*

The *Aluminum Company of America* has begun operation of the first of two pot lines which will increase production of its *Point Comfort* works near Port Lavaca, Texas, to about 135,000,000 pounds of aluminum annually. The government will get first call for five years on the output of these new units. The second is scheduled for completion within three months.

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Minerals Engineering To Explore Tungsten Deposit

Facilities which will aid in the development of tungsten deposits at Lost Creek, 46 miles south of Butte, Montana, are being installed by the Minerals Engineering Company of Grand Junction, Colorado. A laboratory, living quarters, and power facilities have been provided, and five miles of new road have been built into the property to connect with the Union Pacific railway station at Navy, Montana. Diesel shovels and bulldozers are being used to strip the surface orebodies.

A DMEA contract signed in May calls for the expenditure of $111,280 in the driving of two tunnels under surface outcrops exposed in the south side of Lost Creek, near West Adam Peak. The initial contract involves 2,950 feet of tunneling, but Minerals Engineering is preparing a surface plant sufficient for 4,000 feet of main haulage tunnel to further extend the project if justified.

The ore zone is a portion of the newly discovered tungsten ore belt extending southward from Brown's Lake. Values are contained in tungsten and molybdenum in a large tactite zone between granite and limestone with mineralized widths varying from 10 to 200 feet.

New Purim Area To Be Developed By Five Firms

Five mining companies have consolidated their interests in a 162-acre tract between the Silver Summit and Sunshine mines in Idaho, to be known as the "New Purim Area," and have divided ownership in the entire area on a percentage basis. Participating are Hayden Hill Consolidated Mining Company, Lincoln Mining Company, Silver Dollar Mining Company, Polaris Mining Company, and Silver Summit Mining Company.

The area contains the westerly extension of the rich silver vein being mined in several places in Silver Summit ground. Silver Summit will develop the area by extending its 3,000 level west drift about 2,200 feet. This is expected to open the downward extension of a zone which has shown promising mineralization in work done by Silver Dollar from its 1,800 level. Exploration costs will be shared by Silver Summit, Polaris, and Silver Dollar, which has the Hayden Hill and Lincoln properties leased.

A new 600-hp. hoist, capable of operating to a depth of 4,000 feet, is scheduled to be instalied early next year.

Kaiser Acquires Dantore Mine and Facilities

The Dant, Oregon perlite mine and other facilities of the Dantore division of Dant & Russell, Inc., Portland, have been acquired by the Kaiser division of the Henry J. Kaiser Company to augment the company's current line of construction products.

The Dant quarry is said to have sufficient high-grade perlite for 50 years' continuous operation at present plant capacity. The plant includes a main aggregate and tile building, rod mill, conveyor, wet ore storage and auxiliary buildings, a warehouse, dryer, electric substation, and dwellings. It is reported to be the only plant in the country using perlite aggregate as a base for mineral acoustical tile, lightweight plaster aggregate, and trowel coat fines. Kaiser Gypsum is already expanding the plant's productive capacity.

Idaho Consolidated Mines, Inc. has resumed production at its *Twin Peaks* property south of Salmon, Idaho, after a severe fire which destroyed the portal house, including the light plant and compressor. A new portal house is being constructed, along with a stores building, and a shower and dressing room building, all of which are being made from pumice block of a near fire-proof nature. A 315-cubic-foot compressor has been purchased, as well as a gyratory crusher, an air trammer, and other equipment. George F. Chock, until recently with the U. S. Bureau of Mines at Kingman, Arizona, is now full-time resident engineer for Idaho Consolidated. Edmund G. Wilson is president.

The Big Creek fault, major geological feature in the Coeur d'Alene mining region, Idaho, has been opened at depth for the first time. *Sunshine Mining Company's* 3,100 level exploration crosscut through *Metropolitan Mines Corporation* ground cut the structure 4,330 feet south of the Yankee Girl vein. It showed six inches of fault gouge in a 20-foot-wide shear zone and dipped 60 degrees to the south, a Sunshine official said. Stringers of siderite and pyrite were found in the walls.

To speed mine development, mining, and shipping of ore and concentrates, the Mining Requirements Division of the Defense Materials Procurement Agency certified the following road projects in Idaho for construction or improvement: *Calera Mining Company* for 46.35 miles of road to its cobalt property in Lemhi County; *Bradley Mining Company* for snow removal from its road to its tungsten and antimony properties at Stibnite; *J. R. Simplot Company* for 15.6 miles of road to fluorspar property in Lemhi County; *Sun Valley Lead-Silver Mines, Inc.* for 10 miles to lead-zinc property in Blaine County.

American Smelting and Refining Company has resumed underground work at its *Vulcan-Galena* deep development project in Lake Gulch just west of Wallace, Idaho, and has started an exploration crossut into adjoining *Silver Buckle*

SILVER STAR'S DMEA WORK ADVANCES

About half of the work called for under a DMEA contract for exploration of the Minnie Moore and Queen of the Hills properties in the Mineral Hill mining district of Blaine County, Idaho has been completed by the Silver Star-Queens Mines, Inc. Work started last October and continued throughout the winter on a two-shift basis. About $22,000 worth of lead-silver-zinc ore has been stockpiled from drift work on the Queen of the Hills vein. The west lateral has been advanced 750 feet and a raise is now up 120 feet from these workings. The Hershey crosscut has been extended 70 feet under the government contract. This whole project is being done from the 450-foot level of the Rockwell shaft which is about 800 feet vertically beneath the apex of the Queen vein and about 1,200 feet down along the dip of the structure.

Mining Company ground from a site near the Vulcan surface plant. Development work from the 3000-foot level of the shaft was halted early last year to permit shaft repairs and installation of a new hoist and other machinery.

Sun Valley Lead Silver Mines has put on a second crew to push a lower level crosscut to an oreshoot at its *Blue Kitten* property in the Warm Springs district near Ketchum, Idaho, according to President Ross Roundy.

Big Pay Day Mining Company was organized at Sandpoint, Idaho, recently to develop the *Spirit of Idaho* claims on Queen Mountain in Boundary County, near the Canadian border. The firm is headed by Sven Anderson, veteran miner, leaser, and prospector. He relocated ground prospected in World War I days and abandoned because of the high zinc content of the ore, which also contains lead, copper, and silver. Initial plans call for diamond drilling.

The *Red Bird* mine in Custer County, Idaho, once owned by the *Ford Motor Company*, has received a DMEA contract to sink a winze 100 feet and to develop ore shoots on the 1,000-foot level. The Red Bird is a lead mine which has been in operation and production since it was acquired by its present owners, Louis Buchman, L. S. Breckon, and J. A. Norden, in 1947. They plan to spend $53,850 on the project, with the government's share being $26,925. Other DMEA contracts in Idaho went to the *Conjecture* mine in the Lakeview district of Bonner County, for lead-zinc exploration, the government paying $26,614 of $53,228; the *Buckskin Mines Inc.* in Custer County, for lead-zinc, the government paying $6,100 of $12,200; and the *Meadowview* mine in Custer County, for zinc, with the government paying $4,560 of $9,120.

The construction of a washing plant is scheduled soon at the *Tungstar* mine of *Mullin Mines Company* at Fall Creek near Golden, Idaho. Some of the machinery has already been delivered.

Three companies with adjoining claims in the area east of Mullan, Idaho have started extensive exploration work. They are *Eastern Lead Corporation* which has eight lode claims, *Fortune Mining Company* which has ten, and *Princeton Mining Company* which has eleven. The *Cortez Silver-Lead* holdings of *Coronado Copper and Zinc Company* adjoin the three groups on the south. Construction of a common access road to the three properties has been completed. Some trenching and stripping will be done to trace the easterly extension of a promising vein structure discovered last summer on the Worthington Ranch to the west. The vein may possibly pass through the entire width of the three properties.

Golconda Lead Mines of Wallace, Idaho has completely torn down its ball mill for extensive repairs and overhauling. New Fagergren flotation cells are being installed to replace old wooden Southwest machines which have been in use since the mill was built. Each of the lead and zinc circuits will have a bank of eight cells, consisting of six modern roughers and two cleaners.

Highland-Surprise Consolidated Mining Company has started deepening its shaft 450 feet to the 1,900-foot level under a $200,000 DMEA program. Original DMEA-approved plans called for a 400-foot offset shaft 900 feet west of the

present shaft. Plans were changed following the recent opening of ore in the Highland part of the mine east of the shaft on the 1,300 level, according to president Frank J. Luedke of Spokane. The mine is near Kellogg, Idaho.

A channel sample recently cut at the *Kimberley* mine on Bear Creek in the Marshall Lake mining district of Idaho County, Idaho, carried gold, silver, and copper, reports V. W. Bailey, engineer in charge. Four men followed the vein throughout the winter. O. Otness of Tacoma is president of the operating *Kimberley Gold Mines, Inc.*, and F. P. Webber is secretary-treasurer. The home office is at Everett, Washington.

The Idaho state land board has approved these mineral leases: D. H. Cashman of Caldwell, 120 acres in Canyon County for placer mining; Earl and Alice Wiggins of Cambridge, 160 acres in Washington County for quartz; Albert K. Smith of Deary, 10 acres in Latah County for quartz; and William Stanger of Iona, 40 acres in Bonneville County for pumice.

Sunshine Consolidated, Inc., recently has been mining ore carrying 40 to 70 ounces of silver to the ton, according to President W. M. Yeaman of Yakima, Washington. Drifting has been under way on the 2,700, 2,900 and 3,100 levels of the property east of Kellogg, Idaho, with three stopes from the 3,100 level.

A new process for reducing titanium ore to titanium chloride has been patented by a Wallace, Idaho mining engineer, Barnard Wilcox. He claims the process will produce titanium chloride directly from ores such as ilmenite without the simultaneous formation of iron chloride.

MONTANA

The *Dennemore Silver Lead Mines Company* has filed articles of incorporation in Butte, Montana, with a capitalization of $300,000. Incorporators are Edna and Walter Hanson of Wallace, Idaho, and Clarence Nelson of Spokane, Washington.

Mitchell Mining Company has completed a winze from the 300 to the 400-foot level of its *Margaret Ann* mine near Butte, Montana and is crosscutting to six vein structures while continuing stoping operations on the 300-foot level, according to L. M. Peck, vice president.

Silica Products Company of Tacoma, Washington is making preparations to resume development work at its phosphate property near Elliston, Montana, and to reopen its *Negros* lead-zinc mine (formerly *Deer Lodge Queen*) in the Treasure Mountain district near Elliston. Walter Birkland of Tacoma, is president and H. C. Beck of Tacoma is secretary-treasurer.

The Defense Minerals Exploration Administration has approved some additional exploration contracts in Montana recently. The *White Pine Lead Company* plans to spend $28,700 for exploration for lead-zinc in Jefferson County. The government's share will be $14,350. The *Elkhorn Consolidated Mining Company* plans to spend $25,800 to explore for lead-zinc in Jefferson County, with the government providing $12,900. At the *January* mine in Broadwater County, Edmund, Irving, and Richard Pohl, together with Arthur and Harold Hogan, will explore for lead-zinc-copper. The government will pay $6,295 of the $12,590 to be spent. The *West Slope Mining Company* will search for tungsten at the *Birdie* mine in Silver Bow County. Here the government's share will be $7,560 of $10,080 to be spent. Angus McDonald and James Young plan to spend $3,000 in a search for lead in Granite County; the government's share will be $1,500. In Cascade County, Glen Zorn and C. E. Vanman of Butte, will explore the *Boss* and *Atlantis* mining claims for lead-zinc. The government will provide $11,200 of a proposed $22,400 to be spent.

The *Butte Copper & Zinc Company* has extended the lease on its *Emma* mine in Butte, Montana, to the *Anaconda Copper Mining Company* for another 10 years. During 1951 crude ores produced from the mines totaled 302,379 wet tons, which was 12,772 wet tons less than that mined during 1950.

OREGON

Currant Creek Mining, Inc. has resumed operation at its antimony property at Ashwood, Oregon. The No. 3 tunnel has been completed and Mike Dragich and two miners are now working on tunnels No. 5 and 6 in the hope of developing additional antimony-lead-silver ore.

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The *American Zinc, Lead and Smelting Company* has received a DMEA contract to explore for lead-zinc at its *Bluebird* property about seven miles northeast of Metaline Falls, Washington. The government will provide $58,250 of a proposed $116,500 to be spent on the property. The exploration plan consists of approximately 18,000 feet of diamond drilling, with two drills already in operation on a two-shift basis. The property is an optioned group of 17 mining claims contiguous to 30 claims owned by the American Zinc Company.

The *Northwest Mining Association* has set December 5 and 6 as dates for its 1952 convention in Spokane, Washington. Meetings will be at the Davenport Hotel. Robert J. Towne, owner of the *Towne Equipment Company* in Spokane and a member of the association's board of trustees, has been named general chairman.

Three Peaks Mining Company has started operations in Stevens County, Washington, where it has leased three hematite deposits. Bulldozer stripping of the *Kulzer* property at Valley has exposed about 100,000 tons of iron ore, according to Clarence B. Reynolds, field engineer for the Salt Lake City firm. Stripping of an iron vein at the old *Electric Point* lead property near Leadpoint has exposed the structure over a length of 1,000 feet and widths up to 50 feet. Average width is about 25 feet. Open-pit mining is planned. Most of the ore is scheduled for Japan. Dr. Lloyd Hewitt, company geophysicist, is to make magnetometer surveys of the properties.

Trackless mining equipment is being installed by *Pend Oreille Mines and Metals Company* in parts of its *Metaline Falls* mine in Washington. Drilling jumbos, loaders, and trucks, and other equipment have been ordered and are beginning to arrive. The system is expected to reduce mining costs through more flexible operation and lesser labor requirements.

The *American Smelting and Refining Company* has received certification from the DMPA for construction of an 8 to 10-mile access road to its *Van Stone* lead-zinc mine at Northport, Washington.

Kaiser Aluminum and Chemical Corporation will increase output of its Trentwood rolling mill in the Spokane Valley, Washington from 20,000,000 to 24,000,000 pounds of aluminum flat rolled monthly, according to David Mavers, production superintendent. He credited relaxing of credit buying controls and additional government allocations of aluminum for siding and roofing in midwest flood disaster areas. About 500 men are to be added at the rolling mill and the Mead reduction plant north of Spokane, which have been employing a total of 3735.

A. G. Lotze, lessee at the *Gladstone Mountain Mining Company* property at Leadpoint, Washington, reports finding a new deposit of galena in a bed of lead carbonates. The discovery was made in virtually undeveloped ground at the west end of the property which formerly yielded substantial amounts of crude ore from "chimneys" in limestone.

A DMEA contract has gone to the *G.O.P. Antimony Company* for 400 feet of drift work and 250 hours of bulldozer trenching at the *Bales* antimony property in Okanogan County, Washington. The company plans to spend $16,080 the government's share being $12,060. In Yakima County, Ray Whiting and Milton Roumm will explore the *Indian Creek* cinnabar mine for mercury. They propose to spend $18,425, with the government's share amounting to $13,819.

The old *Young America* mine near Bossburg, Stevens County, Washington, in the Northport mining district, has been put back in the producing class by Earle B. Gibbs of Colville after an expenditure of $100,000. Ore has been found in three places. Assay of a sample cut across one, five-foot face indicated mill-grade lead-zinc ore. From 60 to 65 tons are being treated daily in the re-equipped mill and concentrates shipped to Kellogg, Idaho.

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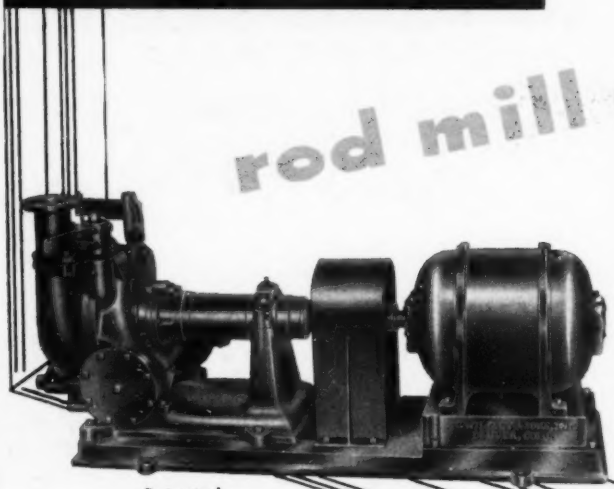

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